

Internet Access Services: Status as of December 31, 2015

Industry Analysis and Technology Division
Wireline Competition Bureau
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Table of Contents

SECTION 1: OVERVIEW & HIGHLIGHTS	1
Introduction	1
Total Connections	2
Figure 1 Fixed and Mobile Connections by Speed 2011-2015	2
Connections by Speed	3
Figure 2(a) Distribution of Fixed Connections by Downstream Speed.....	3
Figure 2(b) Distribution of Fixed Connections by Upstream Speed	4
Figure 3 Fixed Connections by Speed: 2011-2015	5
Number of Providers by Census Block	6
Figure 4 Percentages of Developed Census Blocks in which Providers Report Deployment of Residential Fixed Broadband.....	6
Internet Access Subscribership	7
Figure 5 Fixed Connections 2000-2015	7
Other Report Highlights	8
SECTION 2: SUMMARY STATISTICS - THE NATION	10
SECTION 3: SUMMARY STATISTICS - THE STATES	28
SECTION 4: SUMMARY STATISTICS - COUNTIES AND CENSUS TRACTS	38
SECTION 5: CORRELATION RESULTS - DEMOGRAPHIC MEASURES	48
Technical Notes	56
Glossary	59

SECTION 1: OVERVIEW & HIGHLIGHTS

Introduction

This report summarizes information about Internet access connections in the United States as of December 31, 2015 as collected by FCC Form 477. For purposes of this report, Internet access *connections* are those in service, over 200 kilobits per second (kbps) in at least one direction, and reported to the FCC through Form 477.¹

The report includes data on total and residential Internet access connections by downstream and upstream speed, by technology, by geography, and over time. Section 2 of the report presents nationwide statistics, Section 3 provides state-level data, and Section 4 includes data on the subscribership differences among counties and census tracts.² In addition, Section 5 of the report includes an analysis of the correlations between subscribership ratios and various demographic measures.³ Maps depicting the number of fixed connections per 1,000 households by census tract and the number of fixed providers by census block are available online at <https://www.fcc.gov/reports-research/reports/internet-access-services-reports/internet-access-services-reports>.

¹ See the Technical Notes and Glossary at the end of this report for more-detailed information about the Form 477 data collection and the meaning of terms used in this report. Note that the Form 477 data for the June 30, 2014 filing period were not subject to typical quality checks. See *High-Speed Services for Internet Access: Status as of December 31, 2014* (March 2016) at 2, available at https://apps.fcc.gov/edocs_public/attachmatch/DOC-338630A1.pdf. In addition, the figures on mobile broadband subscribership by speed tier (formerly Figures 4(a), 4(b), and 12) have been removed to maintain firm confidentiality.

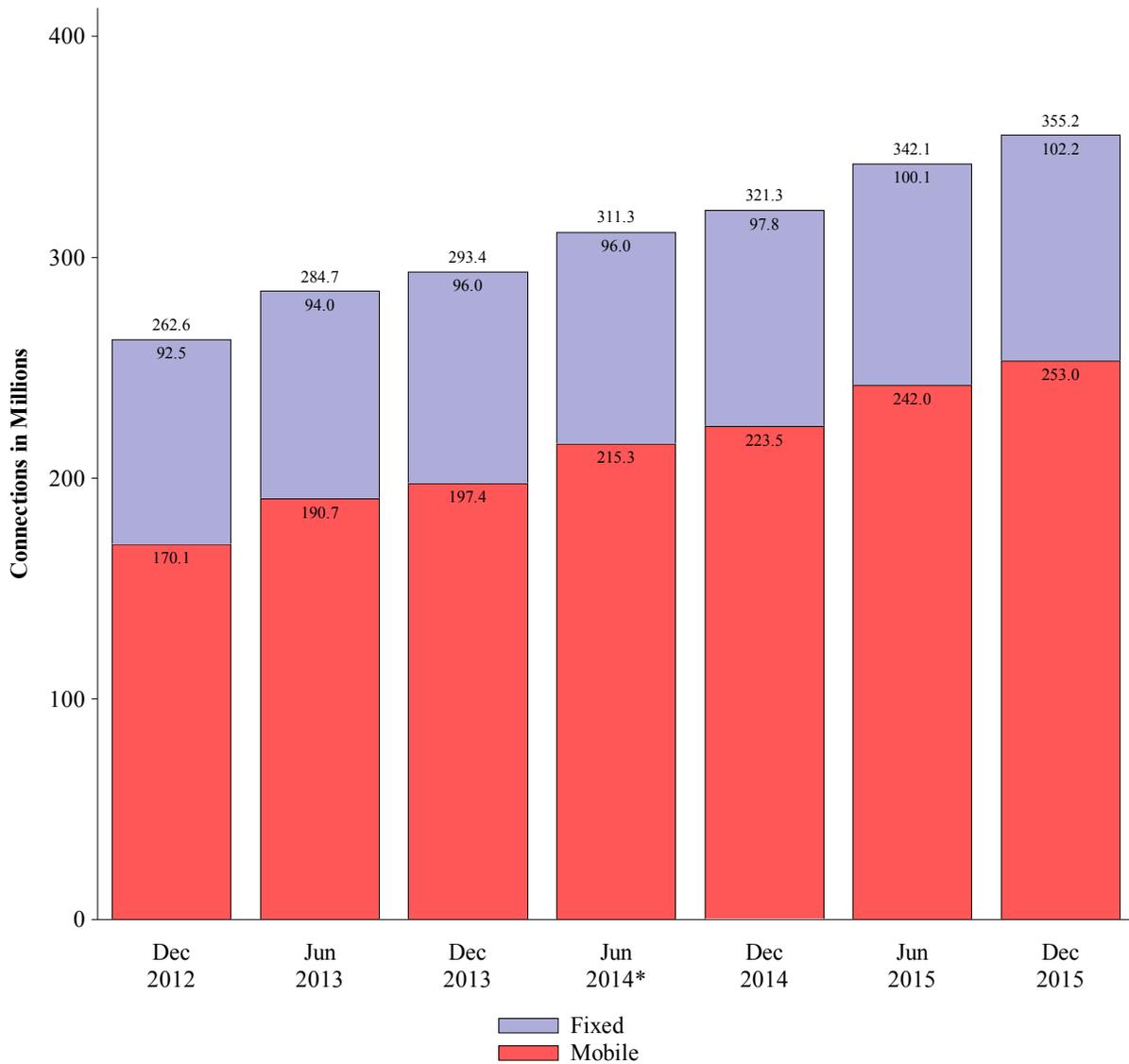
² The Commission began collecting census tract-level data for data as of December 31, 2008. See *High-Speed Services for Internet Access: Status as of December 31, 2008* (February 2010) (*December 2008 High-Speed Report*) at 1-4, available at <http://www.fcc.gov/encyclopedia/high-speed-services-internet-access-reports>.

³ Publicly-available data that are too voluminous to include in this report are available online at <https://www.fcc.gov/general/fcc-form-477-additional-data>.

Total Connections

- As shown in Figure 1, the total number of Internet connections increased by 11% between December 2014 and December 2015 to 355 million.
- Most of the growth in total Internet connections is attributable to increased mobile Internet access subscribership. The number of mobile Internet connections increased 13% year-over-year to 253 million in December 2015, while the number of fixed connections grew to 102 million – up 4% from December 2014.

Figure 1
Fixed and Mobile Connections 2012-2015



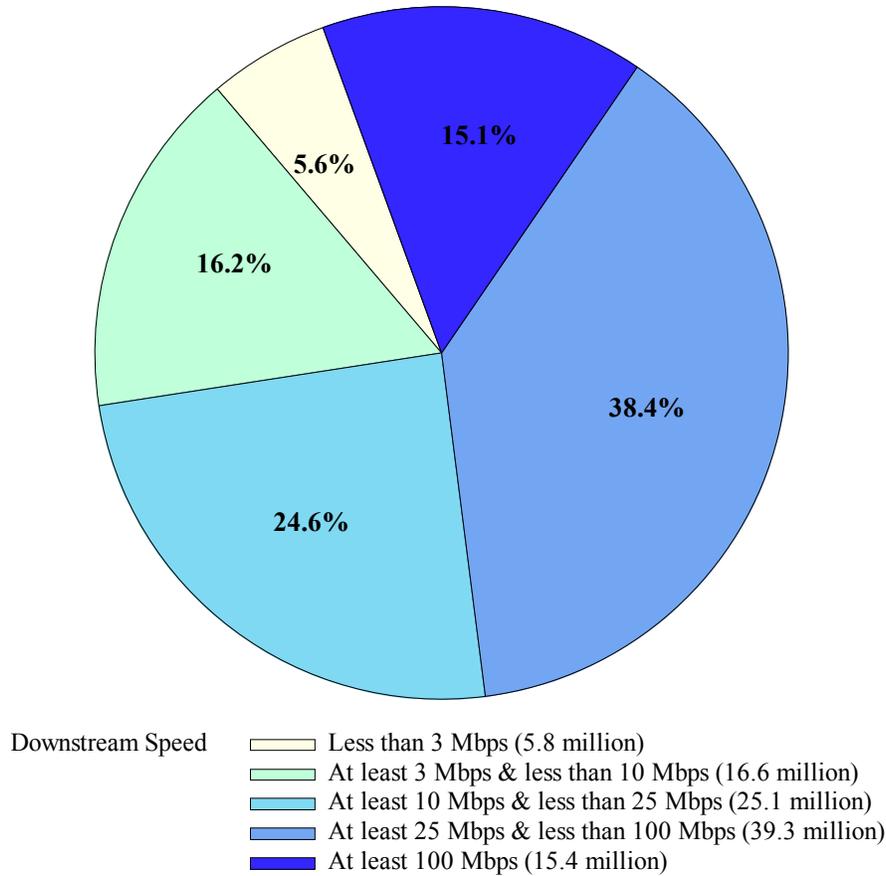
* The June 2014 data have not been subjected to the typical quality checks (see Technical Notes).

The Commission approved changes to the Form 477 in June 2013 that affect the data beginning in June 2014 (see Technical Notes). Some previously-published data may have been revised. Figures may not sum to totals elsewhere in this report due to rounding. Connections include both residential and business connections.

Connections by Speed

Fixed connections – downstream speeds. Figure 2(a) illustrates how the 102 million fixed connections reported for December 2015 were distributed across the five groups of *downstream speeds* defined by breakpoints at 3 Mbps, 10 Mbps, 25 Mbps, and 100 Mbps.

Figure 2(a)
Distribution of Fixed Connections (102.2 million) by Downstream Speed
as of December 31, 2015

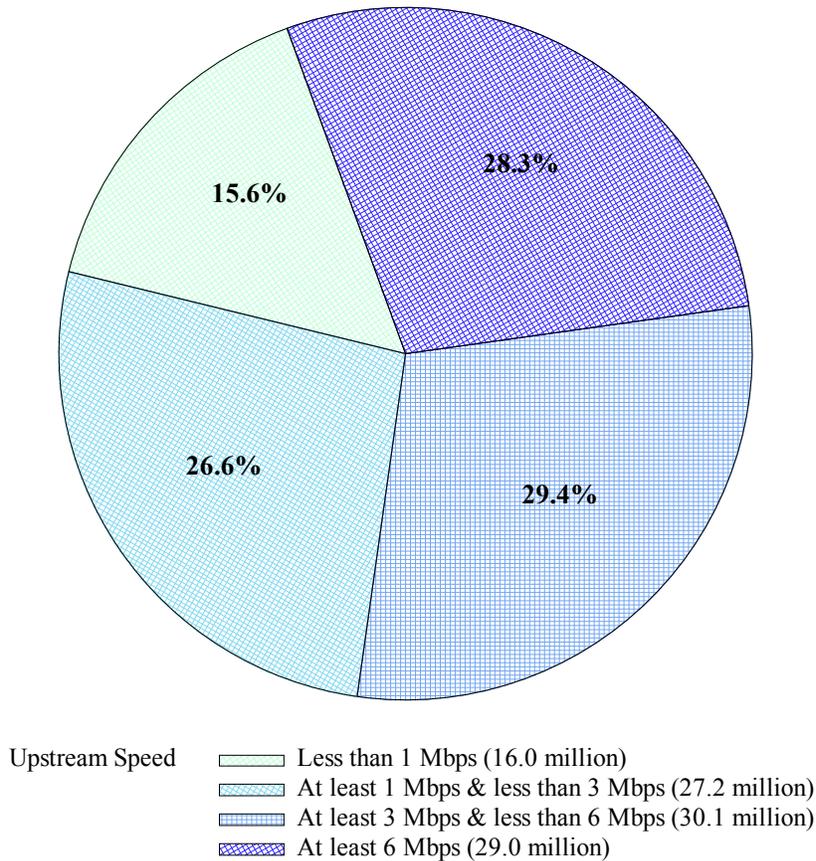


- In December 2015, 6% of fixed connections (or 6 million connections) were slower than 3 Mbps downstream, 16% (or 17 million connections) were at least 3 Mbps downstream but slower than 10 Mbps, 25% (or 25 million connections) were at least 10 Mbps downstream but slower than 25 Mbps, 38% (or 39 million connections) were at least 25 Mbps downstream but slower than 100 Mbps, and 15% (or 15 million connections) were at least 100 Mbps.⁴

⁴ See Figure 9.

Fixed connections – upstream speeds. Figure 2(b) illustrates how the 102 million fixed connections reported for December 2015 were distributed across the four groups of *upstream speeds* defined by breakpoints at 1 Mbps, 3 Mbps, and 6 Mbps.

Figure 2(b)
Distribution of Fixed Connections (102.2 million) by Upstream Speed
as of December 31, 2015

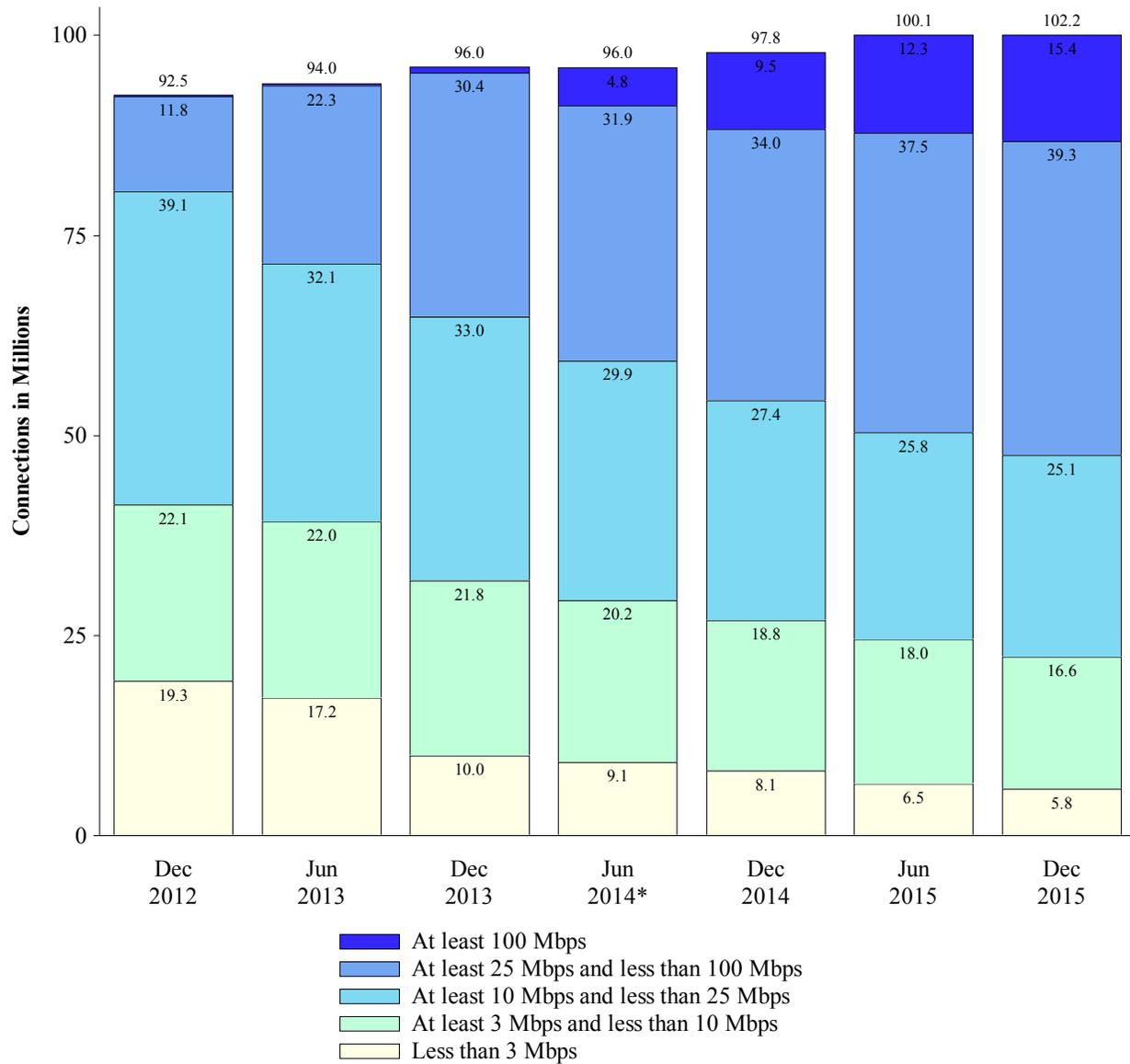


- In December 2015, 16% of fixed connections (or 16 million connections) were slower than 1 Mbps upstream, 27% (or 27 million connections) were at least 1 Mbps upstream but slower than 3 Mbps, 29% (or 30 million connections) were at least 3 Mbps upstream but slower than 6 Mbps, and 28% (or 29 million connections) were at least 6 Mbps upstream.⁵

Fixed connections by downstream speed over time. Figure 3 illustrates how the composition of total fixed Internet connections by different speed groups has changed from 2012 to 2015.

⁵ *Ibid.*

Figure 3
Fixed Connections by Speed 2012-2015



* The June 2014 data have not been subjected to the typical quality checks (see Technical Notes).

The Commission approved changes to the Form 477 in June 2013 that affect the data beginning in June 2014 (see Technical Notes). Some previously-published data may have been revised. Figures may not sum to totals elsewhere in this report due to rounding. Connections include both residential and business connections.

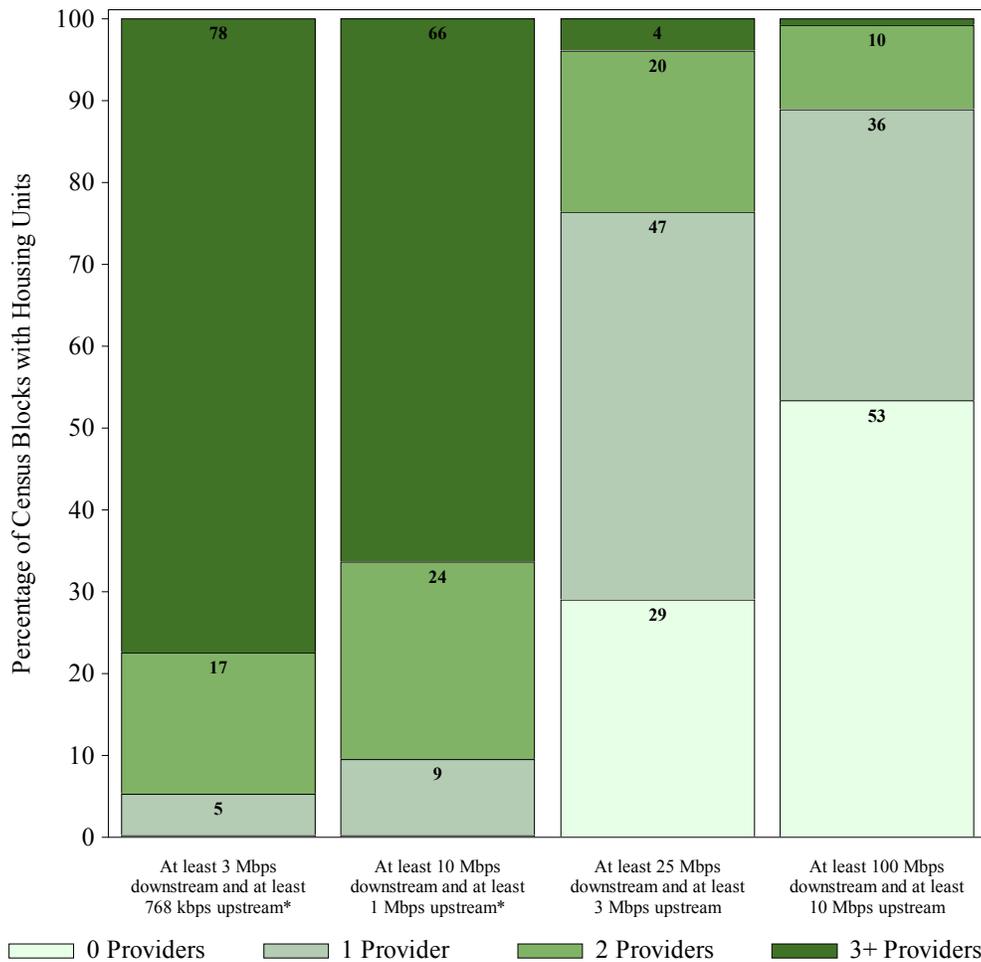
- The percentage of fixed connections with a downstream speed of at least 25 Mbps has grown from 13% (or 12 million connections) in December 2012 to 54% (or 55 million connections) in December 2015. Over the same period, the percentage of fixed connections with slower downstream speeds of less than 3 Mbps has decreased from 21% (or 19 million connections) in December 2012 to 6% (or 6 million connections) in December 2015.⁶

⁶ See Figure 24.

Number of Providers by Census Block

In Figure 4, we show the percentage of “developed” census blocks – blocks that contain housing units – with zero, one, two, or three or more fixed broadband providers offering residential Internet access service at different speeds in December 2015. This information is taken from the block-level Form 477 fixed broadband deployment data that the Commission began collecting in 2014. A provider that reports offering service in a particular census block may not offer service, or service at that speed, to all locations in the census block. Accordingly, the number of providers shown in Figure 4 does not necessarily reflect the number of choices available to a particular household and does not purport to measure competition.

Figure 4
Percentages of Developed Census Blocks in which Providers Reported the Deployment of Residential Fixed Broadband as of December 31, 2015



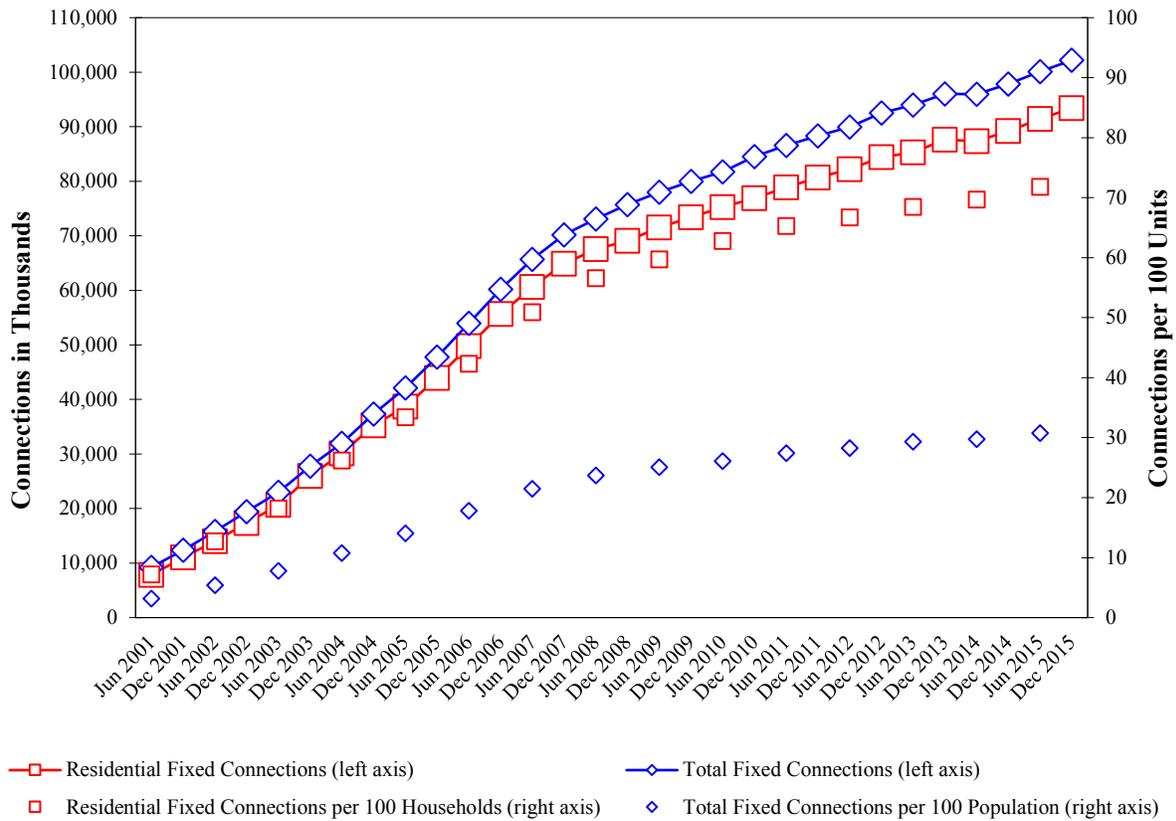
* Satellite service providers report offering Internet access at bandwidths of at least 10 Mbps downstream and 1 Mbps upstream in 99.1% of developed census blocks

Column figures may not sum to 100% due to rounding. Developed census blocks are those with housing units based on the 2010 census.

Internet Access Subscribership

Figure 5 illustrates the number of total and residential fixed Internet access connections (connections over 200 kbps in at least one direction except mobile wireless connections), as well as the number of total fixed connections per 100 persons and the number of residential fixed connections per 100 households, since 2001.⁷

Figure 5
Fixed Connections 2001-2015
 (Connections over 200 kbps in at least one direction)



- Between December 2005 and December 2015, total (business and residential) fixed connections grew from 48 million connections to 102 million connections – at a compound annual growth rate of 8% per year.⁸

⁷ For data through December 2004, only those providers with at least 250 connections in a state were required to report. Historical fixed-location connection counts not included in this report may be found in *June 2008 High-Speed Report* at Tables 1 and 3, available in Excel format at <https://www.fcc.gov/general/reports-high-speed-services-internet-access>.

⁸ The compound annual growth rate (CAGR) is a smoothed rate of growth calculated in three steps. First, divide the ending value by the beginning value. Second, raise the result of that division to a power equal to one divided by the number of years in the period (in this case, 10 years, so the power is 1/10). Third, subtract the number one from the result of the second step.

- Over the same ten-year period, residential fixed connections grew from 44 million connections to 93 million connections – also at a compound annual growth rate of 8% per year.
- From June 2005 to June 2015, the number of residential fixed connections per 100 U.S. households increased from 33 to 72.⁹

Other Report Highlights

Average speeds

- The median downstream speed of all reported fixed connections was 25 Mbps and the median upstream speed was 4 Mbps. For residential fixed connections, the median downstream speed was 25 Mbps and the median upstream speed was 5 Mbps.

Residential connections

- Residential fixed Internet access connections increased by about 5% between December 2014 and December 2015, to 93 million. See Figure 7.
- Residential (non-business) mobile wireless Internet access connections on mobile devices with data plans for full Internet access increased by 14%, to 210 million, between December 2014 and December 2015. See Figure 7.
- Approximately 77% of residential fixed connections had a speed of at least 10 Mbps downstream and 1 Mbps upstream in December 2015, while 55% had a speed of at least 25 Mbps downstream and 3 Mbps upstream. Sixteen percent of all residential fixed connections had a downstream speed of at least 100 Mbps. See Figures 10 and 27.
- As a national average in December 2015, there were 61 residential fixed connections with speeds of at least 10 Mbps downstream and 1 Mbps upstream per 100 households.¹⁰ See Figure 32.

⁹ We calculate residential fixed connections per 100 *households* using, in the denominator, U.S. household estimates from the Census Bureau’s Current Population Survey (CPS) for July of each year and, for Puerto Rico and the other inhabited island areas, Census 2010 households for 2010 and later years and Census 2000 households for the earlier years. (The CPS also estimates U.S. households for March and November of each year.) Figure 5 also shows total (business and residential) fixed connections per 100 *population*, which we calculate using U.S. Census Bureau population estimates for the United States and Puerto Rico – which are as of July 1 each year – and, for the remaining inhabited island areas, Census 2010 population for 2010 and later years and Census 2000 population for the earlier years. This statistic incorporates connections to business locations into a comparison to persons. (We note that the ratio of accurately-measured residential fixed connections to population has a maximum value for any given country and point in time – the value when every household is connected – if we assume that no household would have more than one fixed connection to its premises. For the United States in June, for example, the maximum value would be 39 because there were about 127 million households in the United States and inhabited insular areas and a population of about 325 million according to the sources used for Figure 5.)

¹⁰ Increases over time in the ratio of residential fixed connections to households indicate that increasing shares of households are connected at home. The ratio is somewhat different from the “take rate” of offered service (which may also be called an “adoption rate”) because some households may be located in areas where no fixed-location service is offered. These methodological differences are discussed in greater detail in *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996*,

Census tract and county shares of households with reportable connections

- We estimate the share of households with fixed Internet access connections in individual census tracts and counties as of December 31, 2015.¹¹ We continue to observe substantial variation among these estimates. See Figures 37 and 39.

Household subscribership rates and demographics

- The report includes charts that illustrate correlations between household subscribership rates and demographic measures. We update charts based on income, household density, education, age, and race. The data indicate that some demographic variables are correlated with Internet access subscribership rates. See Figures 44-50.

Amended by the Broadband Data Improvement Act, GN Docket No. 11-121, Eighth Broadband Progress Report, 27 FCC Rcd 10342, 10386, para. 94 (2012).

¹¹ For both census tracts and counties, we continue to find estimates above 100% for the share of households with fixed Internet access connections. See p. 57 for more information.

SECTION 2
SUMMARY STATISTICS: THE NATION

Table of Contents

Figure 6	Connections over 200 kbps in at Least One Direction 2011-2015	12
Figure 7	Residential Connections over 200 kbps in at Least One Direction 2011-2015	12
Figure 8	Residential Fixed Connections by Speed 2012-2015	13
Figure 9	Distribution of Fixed Connections over 200 kbps in at Least One Direction as of December 31, 2015	14
Figure 10	Distribution of Residential Fixed Connections over 200 kbps in at Least One Direction as of December 31, 2015	15
Figure 11	Connections over 200 kbps in at Least One Direction by Technology 2011-2015	16
Figure 12	Connections by Technology as of December 31, 2015	16
Figure 13	Residential Connections over 200 kbps in at Least One Direction by Technology 2011-2015	17
Figure 14	Residential Connections by Technology as of December 31, 2015	17
Figure 15	Fixed Connections at Least 3 Mbps Downstream and 768 kbps Upstream by Technology 2011-2015	18
Figure 16	Residential Fixed Connections at Least 3 Mbps Downstream and 768 kbps Upstream by Technology 2011-2015	18
Figure 17	Fixed Connections at Least 10 Mbps Downstream and 1 Mbps Upstream by Technology 2014-2015	19
Figure 18	Fixed Connections at Least 10 Mbps Downstream and 1 Mbps Upstream by Technology as of December 31, 2015	19
Figure 19	Residential Fixed Connections at Least 10 Mbps Downstream and 1 Mbps Upstream by Technology	20
Figure 20	Residential Fixed Connections at Least 10 Mbps Downstream and 1 Mbps Upstream by Technology as of December 31, 2015	20
Figure 21	Fixed Connections at Least 25 Mbps Downstream and 3 Mbps Upstream by Technology 2014-2015	21
Figure 22	Fixed Connections at Least 25 Mbps Downstream and 3 Mbps Upstream by Technology as of December 31, 2015	21
Figure 23	Residential Fixed Connections at Least 25 Mbps Downstream and 3 Mbps Upstream by Technology 2014-2015	22
Figure 24	Residential Fixed Connections at Least 25 Mbps Downstream and 3 Mbps Upstream by Technology as of December 31, 2015	22
Figure 25	Residential Fixed Connections over 200 kbps in at Least One Direction by Technology 2011-2015 (Shares of Selected Technologies)	23

Figure 26	Residential Fixed Connections over 200 kbps in at Least One Direction by Technology 2011-2015 (Net Adds for Selected Technologies)	23
Figure 27	Residential Fixed Connections by Technology as of December 31, 2015 (Shares of Selected Technologies for Selected Speeds)	24
Figure 28	Fixed Connections by Downstream Speed Tier and Technology as of December 31, 2015	25
Figure 29	Residential Fixed Connections by Downstream Speed Tier and Technology as of December 31, 2015	26
Figure 30	Nationwide Number of Providers of Connections over 200 kbps in at Least One Direction by Technology 2011-2015	27
Figure 31	Nationwide Number of Providers of Connections over 200 kbps in at Least One Direction - Selected Technologies 2011-2015	27

Figure 6
Connections over 200 kbps in at Least One Direction 2011-2015
(In thousands)

<i>Technology</i>	2011		2012		2013		2014		2015	
	<i>Dec</i>	<i>Jun</i>	<i>Dec</i>	<i>Jun</i>	<i>Dec</i>	<i>Jun*</i>	<i>Dec</i>	<i>Jun</i>	<i>Dec</i>	
Total	230,201	243,359	262,564	284,692	293,397	311,284	321,305	342,096	355,212	
Total Fixed	88,317	89,945	92,511	93,986	96,032	95,998	97,810	100,134	102,194	
Mobile Wireless	141,883	153,414	170,053	190,706	197,365	215,286	223,495	241,962	253,017	

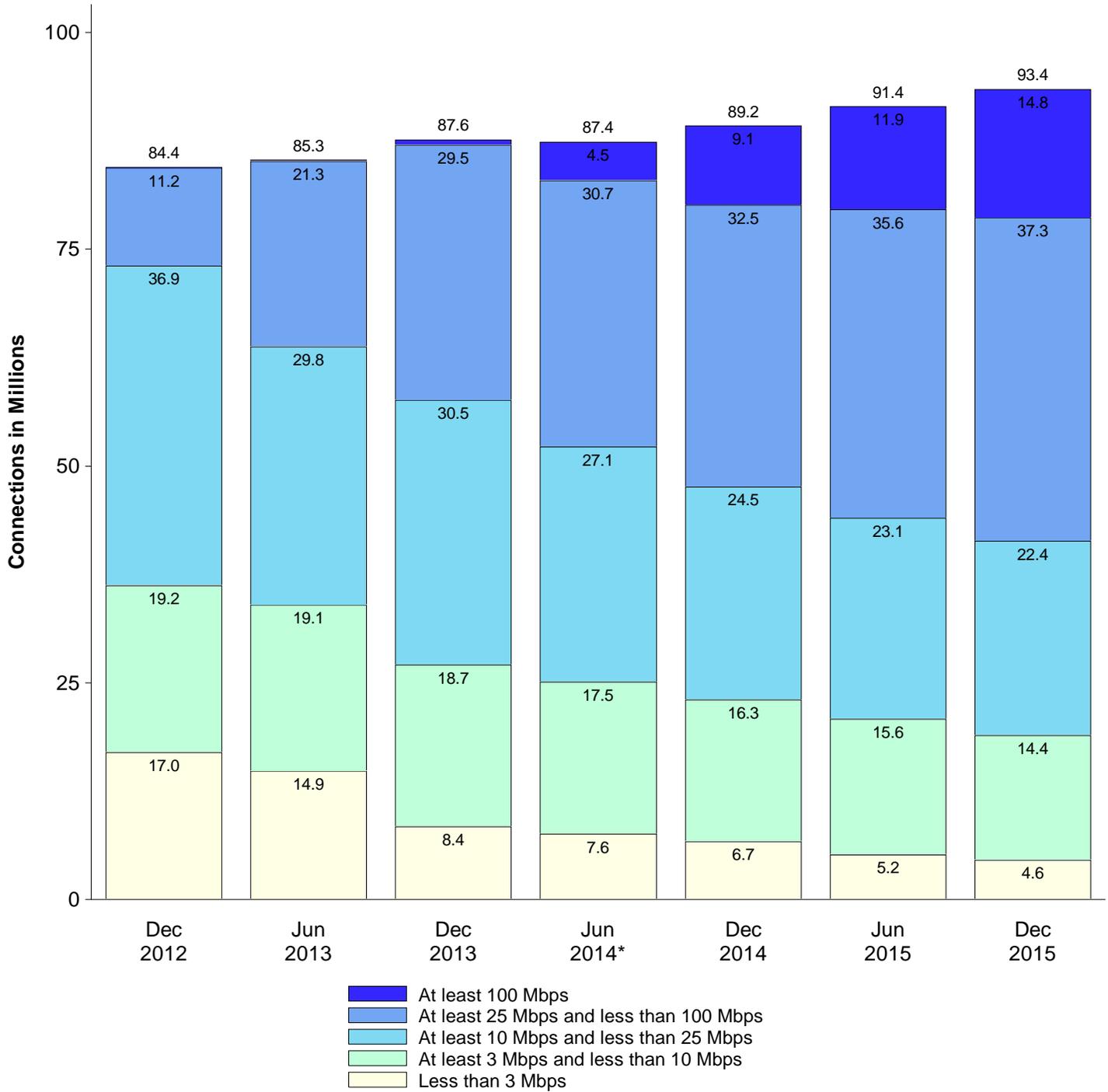
Figure 7
Residential Connections over 200 kbps in at Least One Direction 2011-2015
(In thousands)

<i>Technology</i>	2011		2012		2013		2014		2015	
	<i>Dec</i>	<i>Jun</i>	<i>Dec</i>	<i>Jun</i>	<i>Dec</i>	<i>Jun*</i>	<i>Dec</i>	<i>Jun</i>	<i>Dec</i>	
Total	186,516	196,665	215,817	235,273	246,797	264,343	273,950	292,279	303,653	
Total Fixed	80,706	82,217	84,392	85,277	87,599	87,360	89,196	91,419	93,428	
Mobile Wireless	105,810	114,448	131,425	149,996	159,197	176,983	184,754	200,859	210,224	

* The June 2014 data have not been subjected to the typical quality checks (see Technical Notes).

The Commission approved changes to the Form 477 in June 2013 that affect the data beginning in June 2014 (see Technical Notes). Some previously-published data may have been revised. Figures may not sum to totals elsewhere in this report due to rounding.

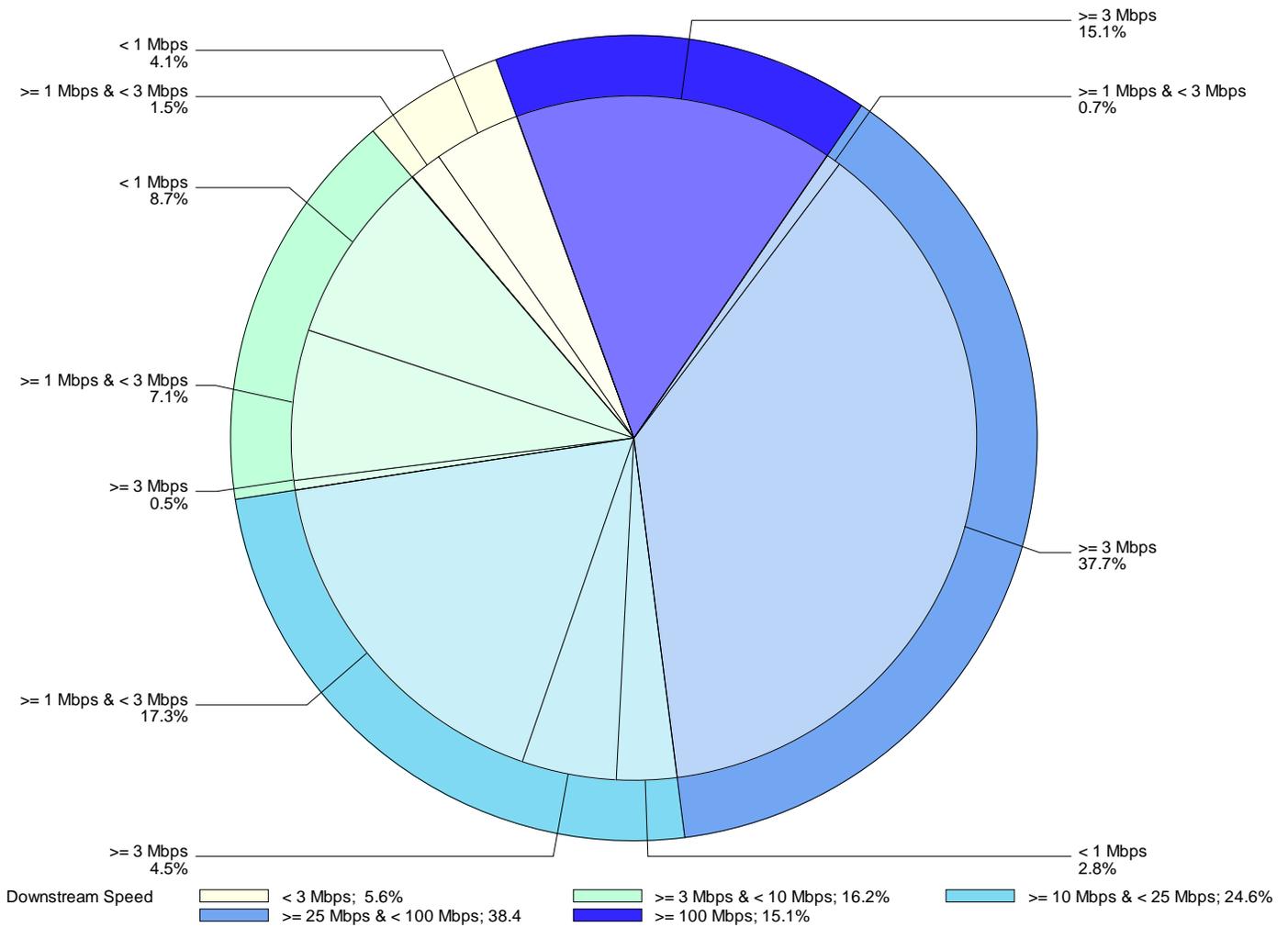
Figure 8
Residential Fixed Connections by Speed 2012-2015



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Figure 9
Distribution of Fixed Connections over 200 kbps in at Least One Direction
as of December 31, 2015



Note: Inner circle (light shading) represents upstream speeds.

Fixed Connections over 200 kbps in at Least One Direction (in thousands)

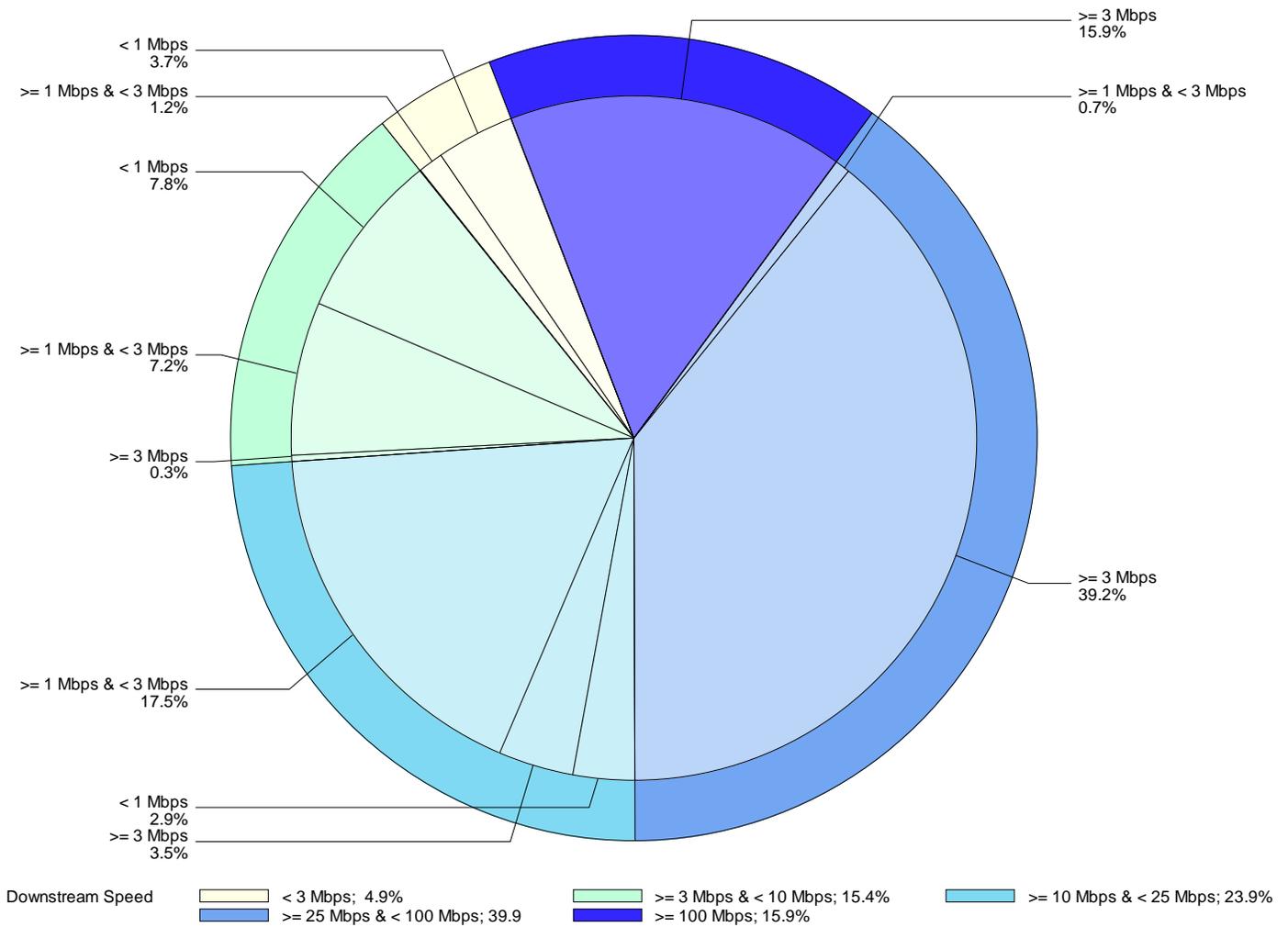
Upstream Speed	Downstream Speed					Total
	Less than 3 Mbps	At least 3 Mbps and less than 10 Mbps	At least 10 Mbps and less than 25 Mbps	At least 25 Mbps and less than 100 Mbps	At least 100 Mbps	
Less than 1 Mbps	4,177	8,890	2,904	4	#	15,975
At least 1 Mbps & Less than 3 Mbps	1,552	7,241	17,661	707	6	27,167
At least 3 Mbps	42	462	4,555	38,574	15,420	59,052
Total	5,771	16,593	25,119	39,285	15,426	102,194

Percentages

Less than 1 Mbps	4.1	8.7	2.8	0.0	0.0	15.6
At least 1 Mbps & Less than 3 Mbps	1.5	7.1	17.3	0.7	0.0	26.6
At least 3 Mbps	0.0	0.5	4.5	37.7	15.1	57.8
Total	5.6	16.2	24.6	38.4	15.1	100.0

Note: Figures may not sum to totals due to rounding.
 Source: FCC Form 477.

Figure 10
Distribution of Residential Fixed Connections over 200 kbps in at Least One Direction
as of December 31, 2015



Note: Inner circle (light shading) represents upstream speeds.

Residential Fixed Connections over 200 kbps in at Least One Direction (in thousands)

Upstream Speed	Downstream Speed					Total
	Less than 3 Mbps	At least 3 Mbps and less than 10 Mbps	At least 10 Mbps and less than 25 Mbps	At least 25 Mbps and less than 100 Mbps	At least 100 Mbps	
Less than 1 Mbps	3,452	7,322	2,713	3	#	13,490
At least 1 Mbps & Less than 3 Mbps	1,084	6,765	16,349	663	1	24,862
At least 3 Mbps	39	270	3,313	36,612	14,841	55,076
Total	4,575	14,358	22,375	37,278	14,842	93,428

Percentages						
Less than 1 Mbps	3.7	7.8	2.9	0.0	0.0	14.4
At least 1 Mbps & Less than 3 Mbps	1.2	7.2	17.5	0.7	0.0	26.6
At least 3 Mbps	0.0	0.3	3.5	39.2	15.9	59.0
Total	4.9	15.4	23.9	39.9	15.9	100.0

Note: Figures may not sum to totals due to rounding.
 Source: FCC Form 477.

Figure 11
Connections over 200 kbps in at Least One Direction by Technology 2011-2015
(In thousands)

Technology	2011		2012		2013		2014		2015	
	Dec	Jun	Dec	Jun	Dec	Jun*	Dec	Jun	Dec	
Total	230,201	243,359	262,564	284,692	293,397	311,284	321,305	342,096	355,212	
Total Fixed	88,317	89,945	92,511	93,986	96,032	95,998	97,810	100,134	102,194	
aDSL	31,330	31,173	30,974	30,657	30,690	29,873	28,527	29,341	28,134	
sDSL	148	139	132	117	108	96	85	75	60	
Other Wireline ¹	795	770	796	769	772	792	723	682	693	
Cable Modem	48,263	49,664	51,646	52,760	54,009	54,011	56,301	57,243	59,696	
FTTP ²	5,898	6,300	6,733	7,250	7,745	8,326	9,180	9,687	10,492	
Satellite	1,190	1,217	1,454	1,623	1,849	1,964	2,006	2,058	2,071	
Fixed Wireless	693	682	777	810	858	935	988	1,049	1,049	
Mobile Wireless	141,883	153,414	170,053	190,706	197,365	215,286	223,495	241,962	253,017	

¹ Power Line and Other are summarized with Other Wireline to maintain firm confidentiality. See Technical Notes at the end of the report for a description of Form 477 technology categories and other reporting requirements.

² Fiber to the premises.

* The June 2014 data have not been subjected to the typical quality checks (see Technical Notes).

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Figure 12
Connections by Technology as of December 31, 2015

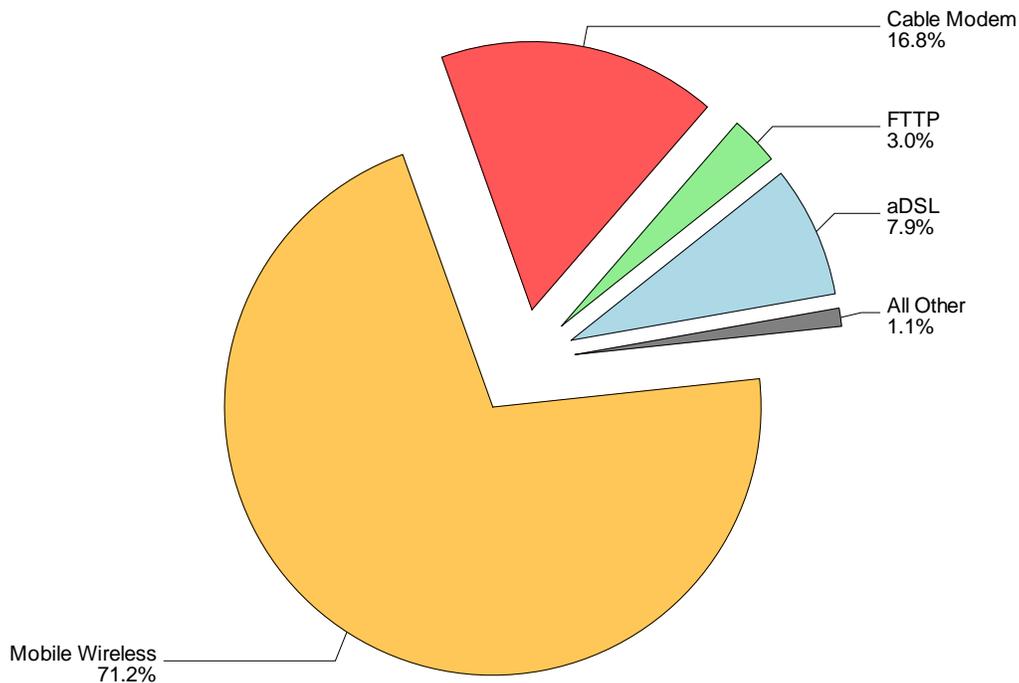


Figure 13
Residential Connections over 200 kbps in at Least One Direction by Technology 2011-2015
(In thousands)

Technology	2011		2012		2013		2014		2015	
	Dec	Jun	Dec	Jun	Dec	Jun*	Dec	Jun	Dec	
Total	186,516	196,665	215,817	235,273	246,797	264,343	273,950	292,279	303,653	
Total Fixed	80,706	82,217	84,392	85,277	87,599	87,360	89,196	91,419	93,428	
aDSL	27,758	27,632	27,391	26,869	27,248	26,678	25,603	26,154	25,139	
sDSL	54	49	50	43	39	30	22	17	16	
Other Wireline ¹	40	14	34	22	22	57	59	52	54	
Cable Modem	45,832	47,033	48,716	49,494	50,709	50,389	52,467	53,543	55,798	
FTTP ²	5,521	5,892	6,270	6,732	7,176	7,617	8,368	8,841	9,592	
Satellite	886	998	1,242	1,407	1,643	1,760	1,803	1,875	1,891	
Fixed Wireless	616	600	689	710	763	829	874	937	939	
Mobile Wireless	105,810	114,448	131,425	149,996	159,197	176,983	184,754	200,859	210,224	

¹ Power Line and Other are summarized with Other Wireline to maintain firm confidentiality. See Technical Notes at the end of the report for a description of Form 477 technology categories and other reporting requirements.

² Fiber to the premises.

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Figure 14
Residential Connections by Technology as of December 31, 2015

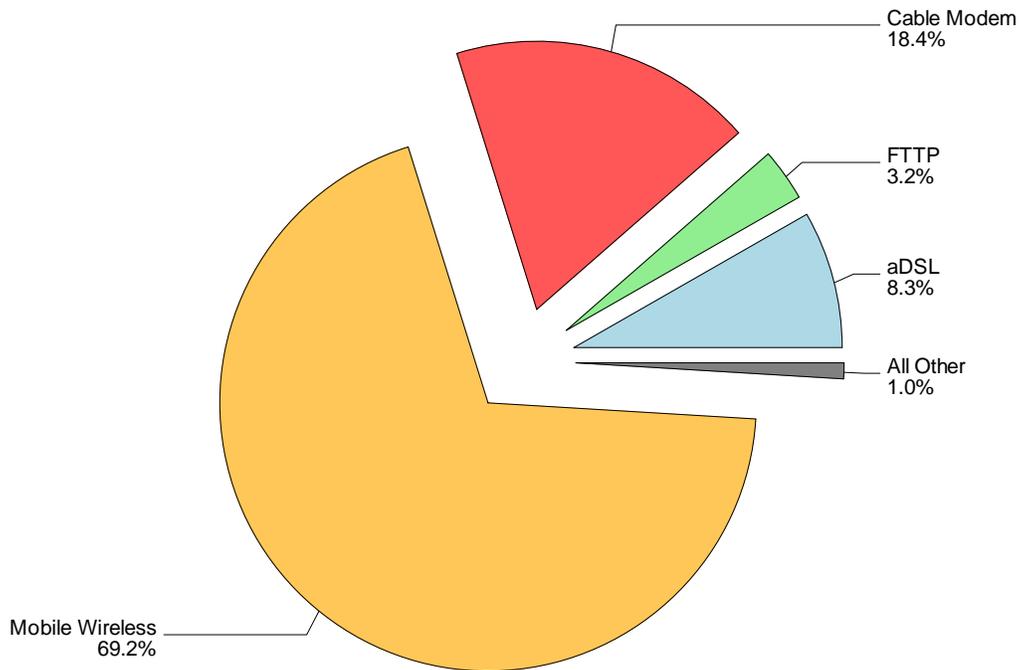


Figure 15
Fixed Connections at Least 3 Mbps Downstream and 768 kbps Upstream by Technology 2011-2015
(In thousands)

<i>Technology</i>	2011		2012		2013		2014		2015	
	<i>Dec</i>	<i>Jun</i>	<i>Dec</i>	<i>Jun</i>	<i>Dec</i>	<i>Jun*</i>	<i>Dec</i>	<i>Jun</i>	<i>Dec</i>	
Total	51,097	57,243	64,657	68,673	78,175	78,981	83,872	88,985	92,330	
aDSL	10,351	12,875	13,108	14,233	18,540	17,246	18,557	20,939	20,743	
sDSL	26	30	33	34	36	33	28	24	20	
Other Wireline ¹	228	239	276	284	308	310	308	296	330	
Cable Modem	34,699	37,798	44,133	46,014	50,236	51,304	53,853	55,807	58,409	
FTTP ²	5,606	6,001	6,430	6,981	7,486	8,111	8,974	9,551	10,377	
Satellite	#	87	394	791	1,181	1,424	1,558	1,690	1,744	
Fixed Wireless	186	214	284	337	388	553	594	677	707	

¹ Power Line and Other are summarized with Other Wireline to maintain firm confidentiality. See Technical Notes at the end of the report for a description of Form 477 technology categories and other reporting requirements.

² Fiber to the premises.

* The June 2014 data have not been subjected to the typical quality checks (see Technical Notes).

= Rounds to zero.

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Figure 16
Residential Fixed Connections at Least 3 Mbps Downstream and 768 kbps Upstream by Technology 2011-2015
(In thousands)

<i>Technology</i>	2011		2012		2013		2014		2015	
	<i>Dec</i>	<i>Jun</i>	<i>Dec</i>	<i>Jun</i>	<i>Dec</i>	<i>Jun*</i>	<i>Dec</i>	<i>Jun</i>	<i>Dec</i>	
Total	47,427	53,070	59,914	63,342	72,476	73,042	77,540	82,300	85,429	
aDSL	9,274	11,563	11,669	12,666	16,715	15,673	16,867	18,985	18,865	
sDSL	12	12	13	13	13	7	2	1	2	
Other Wireline ¹	16	7	20	21	20	45	50	45	47	
Cable Modem	32,693	35,583	41,561	43,061	47,258	47,924	50,308	52,241	54,646	
FTTP ²	5,271	5,632	6,012	6,504	6,958	7,491	8,246	8,750	9,513	
Satellite	#	86	393	788	1,177	1,419	1,552	1,682	1,734	
Fixed Wireless	161	185	245	289	335	483	516	596	623	

¹ Power Line and Other are summarized with Other Wireline to maintain firm confidentiality. See Technical Notes at the end of the report for a description of Form 477 technology categories and other reporting requirements.

² Fiber to the premises.

* The June 2014 data have not been subjected to the typical quality checks (see Technical Notes).

= Rounds to zero.

The Commission approved changes to the Form 477 in June 2013 that affect the data beginning in June 2014 (see Technical Notes). Some previously-published data may have been revised. Figures may not sum to totals due to rounding.

Figure 17
Fixed Connections at Least 10 Mbps Downstream and 1 Mbps Upstream by Technology 2014-2015
(In thousands)

<i>Technology</i>	<i>2014</i>		<i>2015</i>	
	<i>Jun*</i>	<i>Dec</i>	<i>Jun</i>	<i>Dec</i>
Total	63,849	68,009	72,691	76,923
aDSL	7,573	8,310	9,463	9,799
sDSL	9	6	8	8
Other Wireline ¹	169	183	182	203
Cable Modem	47,296	49,839	52,646	55,702
FTTP ²	7,615	8,341	8,873	9,569
Satellite	1,016	1,137	1,298	1,393
Fixed Wireless	170	192	220	250

¹ Power Line and Other are summarized with Other Wireline to maintain firm confidentiality. See Technical Notes at the end of the report for a description of Form 477 technology categories and other reporting requirements.

² Fiber to the premises.

* The June 2014 data have not been subjected to the typical quality checks (see Technical Notes).

= Rounds to zero.

The Commission approved changes to the Form 477 in June 2013 that affect the data beginning in June 2014 (see Technical Notes).
Figures may not sum to totals due to rounding.

Figure 18
Fixed Connections at Least 10 Mbps Downstream and 1 Mbps Upstream
by Technology as of December 31, 2015

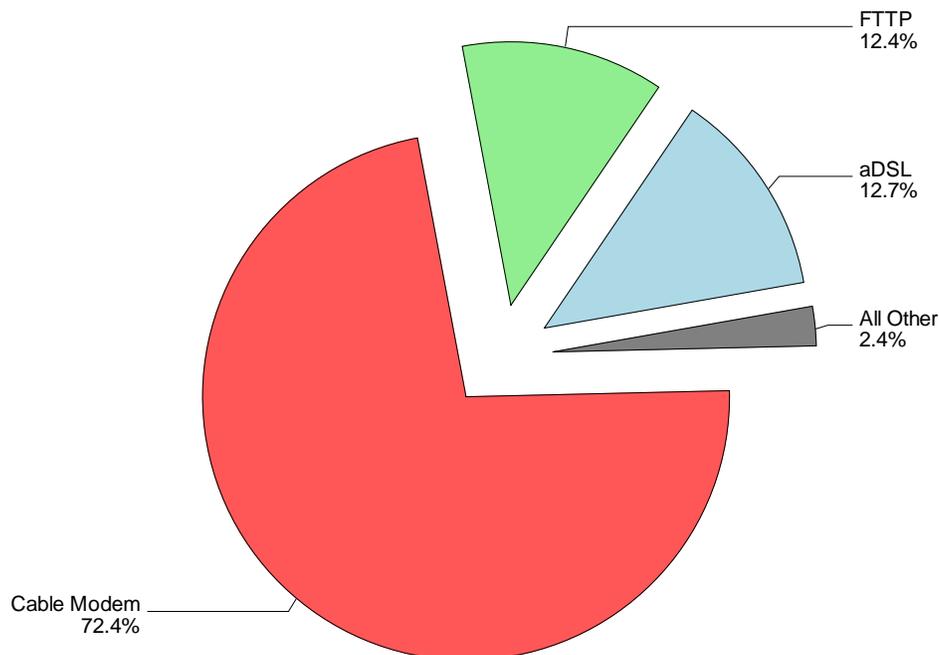


Figure 19
Residential Fixed Connections at Least 10 Mbps Downstream and 1 Mbps Upstream by Technology in 2015
(In thousands)

<i>Technology</i>	<i>2014</i>		<i>2015</i>	
	<i>Jun*</i>	<i>Dec</i>	<i>Jun</i>	<i>Dec</i>
Total	59,751	63,522	67,881	71,779
aDSL	7,035	7,741	8,740	9,069
sDSL	3	#	#	1
Other Wireline ¹	33	36	38	43
Cable Modem	44,480	46,767	49,475	52,291
FTTP ²	7,044	7,679	8,144	8,776
Satellite	1,014	1,133	1,293	1,386
Fixed Wireless	142	166	190	212

¹ Power Line and Other are summarized with Other Wireline to maintain firm confidentiality. See Technical Notes at the end of the report for a description of Form 477 technology categories and other reporting requirements.

² Fiber to the premises.

* The June 2014 data have not been subjected to the typical quality checks (see Technical Notes).

= Rounds to zero.

The Commission approved changes to the Form 477 in June 2013 that affect the data beginning in June 2014 (see Technical Notes). Figures may not sum to totals due to rounding.

Figure 20
Residential Fixed Connections at Least 10 Mbps Downstream and 1 Mbps Upstream
by Technology as of December 31, 2015

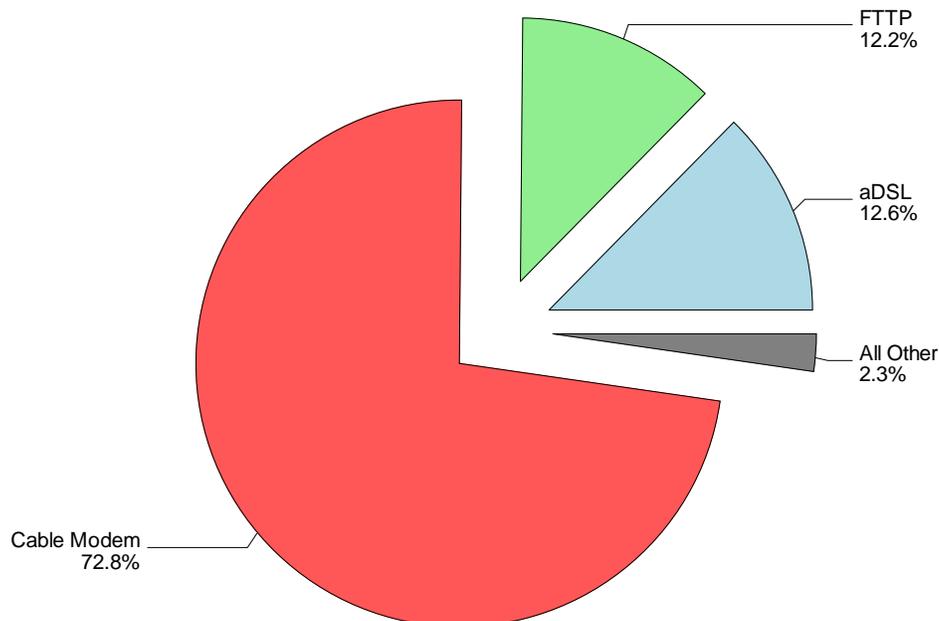


Figure 21
Fixed Connections at Least 25 Mbps Downstream and 3 Mbps Upstream by Technology 2014-2015
(In thousands)

Technology	2014		2015	
	Jun*	Dec	Jun	Dec
Total	35,927	42,390	48,449	53,994
aDSL	420	598	761	938
sDSL	2	2	1	2
Other Wireline ¹	114	125	125	141
Cable Modem	30,769	36,095	40,646	45,170
FTTP ²	4,603	5,542	6,870	7,685
Satellite	#	#	#	2
Fixed Wireless	19	28	47	55

¹ Power Line and Other are summarized with Other Wireline to maintain firm confidentiality. See Technical Notes at the end of the report for a description of Form 477 technology categories and other reporting requirements.
² Fiber to the premises.
* The June 2014 data have not been subjected to the typical quality checks (see Technical Notes).
= Rounds to zero.

The Commission approved changes to the Form 477 in June 2013 that affect the data beginning in June 2014 (see Technical Notes).
Figures may not sum to totals due to rounding.

Figure 22
Fixed Connections at Least 25 Mbps Downstream and 3 Mbps Upstream
by Technology as of December 31, 2015

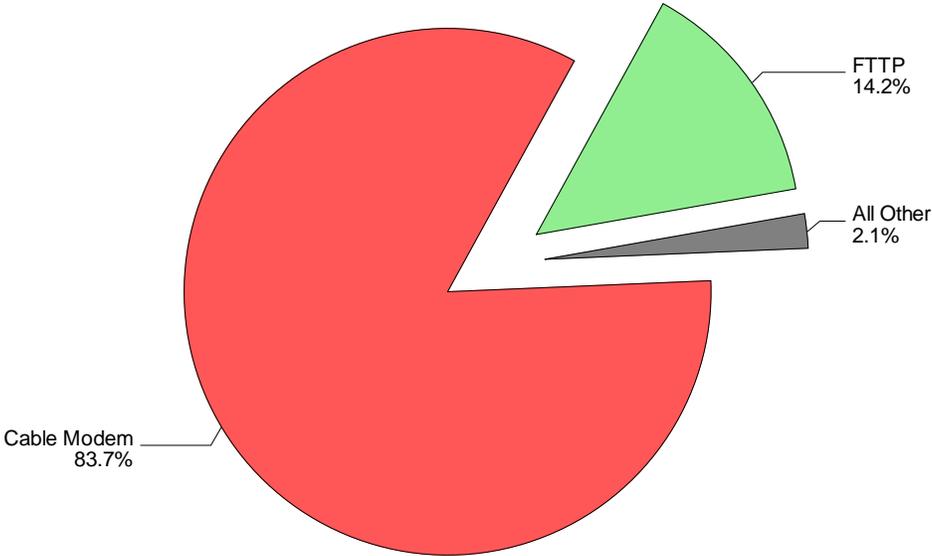


Figure 23
Residential Fixed Connections at Least 25 Mbps Downstream and 3 Mbps Upstream by Technology in 2015
(In thousands)

Technology	2014		2015	
	Jun*	Dec	Jun	Dec
Total	34,439	40,595	46,198	51,454
aDSL	397	566	727	897
sDSL	#	#	#	1
Other Wireline ¹	22	26	26	31
Cable Modem	29,806	34,914	39,083	43,388
FTTP ²	4,201	5,068	6,323	7,089
Satellite	0	0	0	2
Fixed Wireless	14	22	40	45

¹ Power Line and Other are summarized with Other Wireline to maintain firm confidentiality. See Technical Notes at the end of the report for a description of Form 477 technology categories and other reporting requirements.

² Fiber to the premises.

* The June 2014 data have not been subjected to the typical quality checks (see Technical Notes).

= Rounds to zero.

The Commission approved changes to the Form 477 in June 2013 that affect the data beginning in June 2014 (see Technical Notes). Figures may not sum to totals due to rounding.

Figure 24
Residential Fixed Connections at Least 25 Mbps Downstream and 3 Mbps Upstream
by Technology as of December 31, 2015

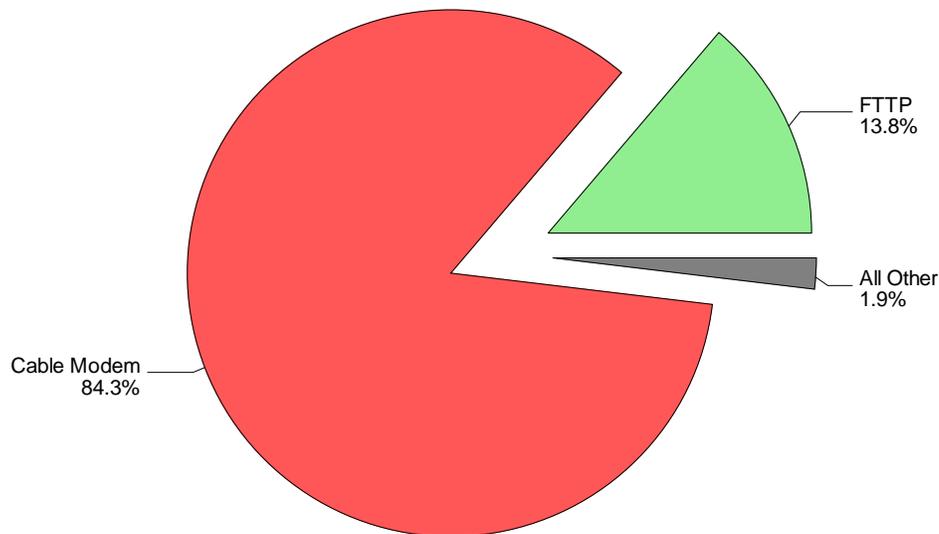
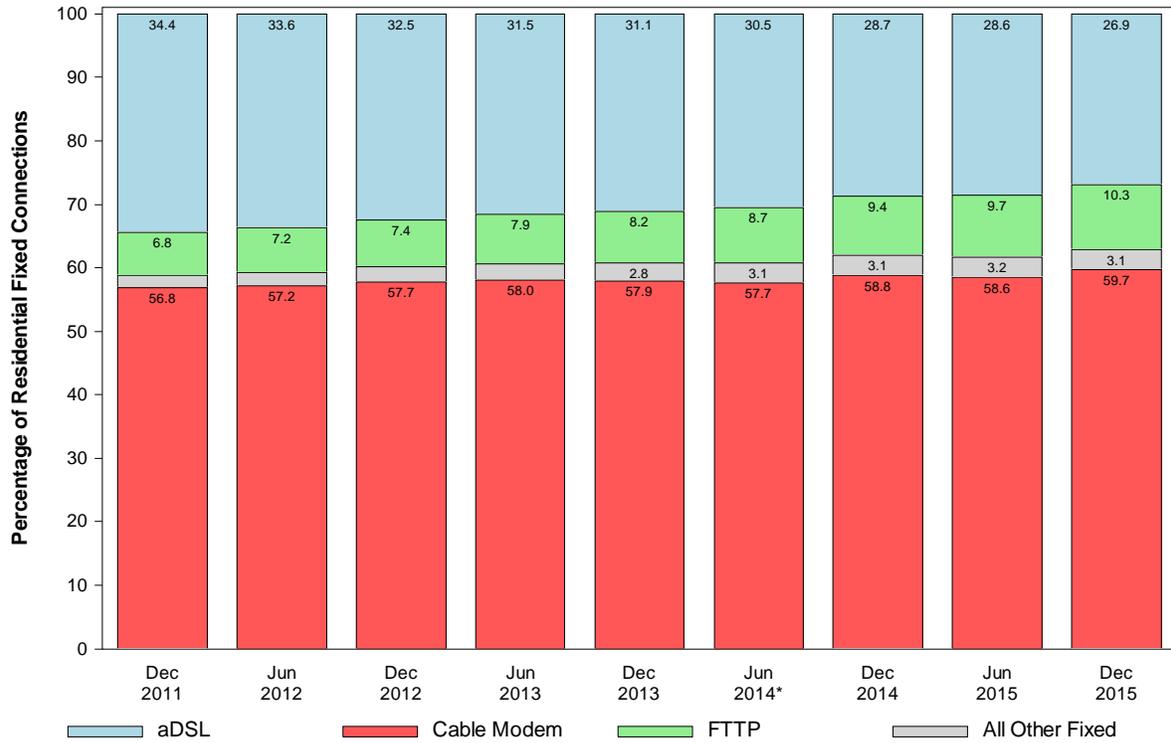


Figure 25
Residential Fixed Connections over 200 kbps in at Least One Direction 2011-2015
 (Shares of selected technologies)



* The June 2014 data have not been subjected to the typical quality checks (see Technical Notes).

The Commission approved changes to the Form 477 in June 2013 that affect the data beginning in June 2014 (see Technical Notes). Some previously-published data may have been revised. Figures may not sum to totals due to rounding.

Figure 26
Residential Fixed Connections over 200 kbps in at Least One Direction 2011-2015
 (Net adds for selected technologies)

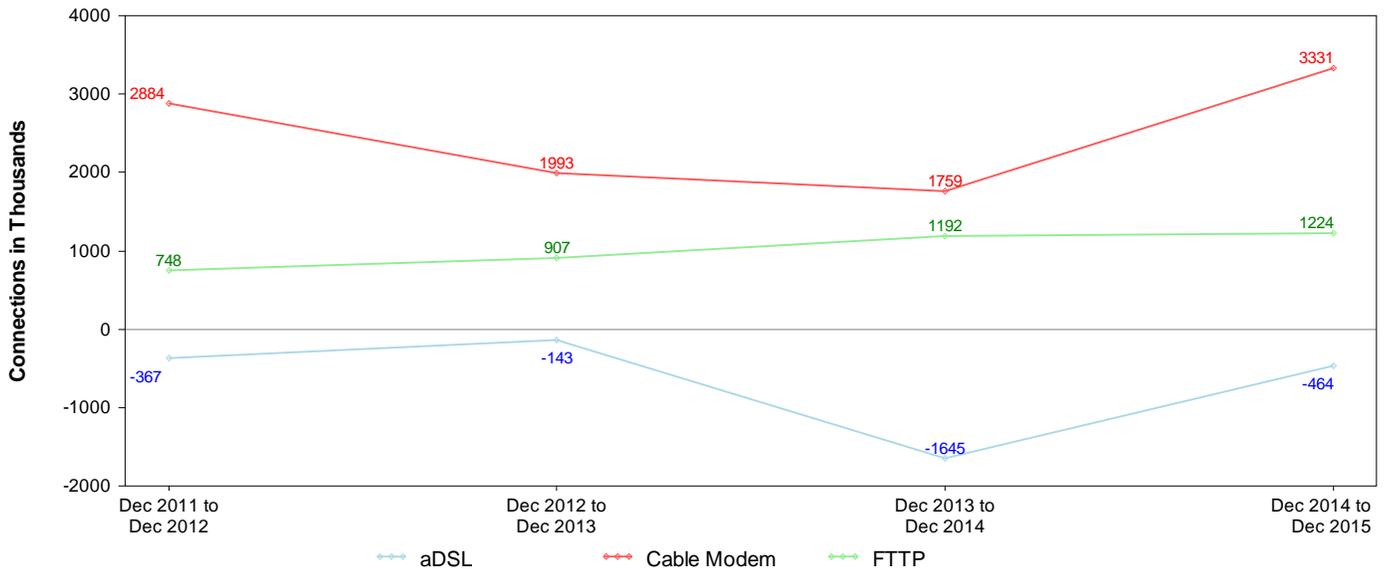


Figure 27
Residential Fixed Connections by Technology as of December 31, 2015
(Shares of selected technologies for selected speeds, connections in thousands)

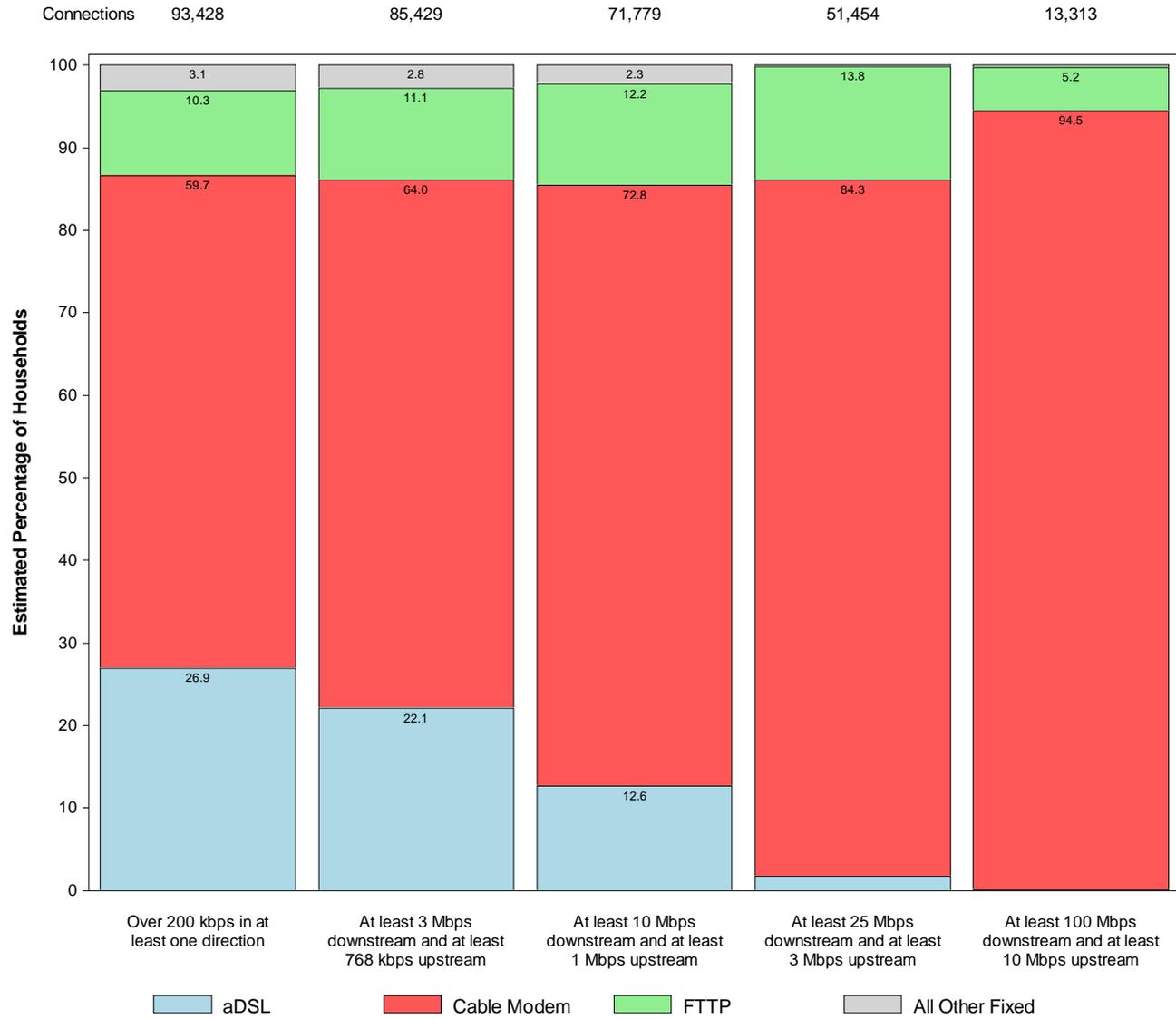


Figure 28
Fixed Connections by Downstream Speed Tier and Technology as of December 31, 2015
(In thousands)

Technology	Downstream Speed						Total
	Less than 1.5 Mbps	At least 1.5 Mbps and less than 3 Mbps	At least 3 Mbps and less than 10 Mbps	At least 10 Mbps and less than 25 Mbps	At least 25 Mbps and less than 100 Mbps	At least 100 Mbps	
aDSL	1,422	2,455	11,987	11,169	1,093	7	28,134
sDSL	27	13	12	5	*	*	60
Other Wireline ¹	59	299	132	60	27	116	693
Cable Modem	142	688	3,014	10,160	31,282	14,410	59,696
FTTP	39	44	555	2,139	6,841	875	10,492
Satellite	251	43	385	1,390	*	*	2,071
Fixed Wireless	121	167	509	196	37	17	1,049
Total	2,061	3,710	16,593	25,119	39,285	15,426	102,194

Percentages							
aDSL	1.4	2.4	11.7	10.9	1.1	0.0	27.5
sDSL	0.0	0.0	0.0	0.0	*	*	0.1
Other Wireline ¹	0.1	0.3	0.1	0.1	0.0	0.1	0.7
Cable Modem	0.1	0.7	2.9	9.9	30.6	14.1	58.4
FTTP	0.0	0.0	0.5	2.1	6.7	0.9	10.3
Satellite	0.2	0.0	0.4	1.4	*	*	2.0
Fixed Wireless	0.1	0.2	0.5	0.2	0.0	0.0	1.0
Total	2.0	3.6	16.2	24.6	38.4	15.1	100.0

¹ Power Line and Other are summarized with Other Wireline to maintain firm confidentiality. See Technical Notes at the end of the report for a description of Form 477 technology categories and other reporting requirements.

= Rounds to Zero.

* = Data withheld to maintain firm confidentiality.

Note: Figures may not sum to totals due to rounding.

Source: FCC Form 477.

Figure 29
Residential Fixed Connections by Downstream Speed Tier and Technology as of December 31, 2015
(In thousands)

Technology	Downstream Speed						Total
	Less than 1.5 Mbps	At least 1.5 Mbps and less than 3 Mbps	At least 3 Mbps and less than 10 Mbps	At least 10 Mbps and less than 25 Mbps	At least 25 Mbps and less than 100 Mbps	At least 100 Mbps	
aDSL	1,290	2,052	10,415	10,347	1,032	3	25,139
sDSL	12	2	1	#	*	*	16
Other Wireline ¹	1	3	6	12	8	24	54
Cable Modem	135	640	2,615	8,520	29,782	14,107	55,798
FTTP	20	31	482	1,944	6,419	696	9,592
Satellite	106	19	379	1,384	*	*	1,891
Fixed Wireless	110	156	460	167	33	12	939
Total	1,674	2,902	14,358	22,375	37,278	14,842	93,428

Percentages							
aDSL	1.4	2.2	11.1	11.1	1.1	0.0	26.9
sDSL	0.0	0.0	0.0	0.0	*	*	0.0
Other Wireline ¹	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Cable Modem	0.1	0.7	2.8	9.1	31.9	15.1	59.7
FTTP	0.0	0.0	0.5	2.1	6.9	0.7	10.3
Satellite	0.1	0.0	0.4	1.5	*	*	2.0
Fixed Wireless	0.1	0.2	0.5	0.2	0.0	0.0	1.0
Total	1.8	3.1	15.4	23.9	39.9	15.9	100.0

¹ Power Line and Other are summarized with Other Wireline to maintain firm confidentiality. See Technical Notes at the end of the report for a description of Form 477 technology categories and other reporting requirements.

= Rounds to Zero.

* = Data withheld to maintain firm confidentiality.

Note: Figures may not sum to totals due to rounding.

Source: FCC Form 477.

Figure 30
Nationwide Number of Providers of Connections over 200 kbps in at Least One Direction
by Technology 2011-2015

Technology	2011		2012		2013		2014		2015	
	Dec	Jun	Dec	Jun	Dec	Jun+	Dec	Jun	Dec	
aDSL	867	860	865	852	851	794	792	790	776	
sDSL	255	251	255	246	239	195	191	177	182	
Other Wireline ¹	274	258	262	246	245	270	245	239	250	
Cable Modem	405	401	404	403	407	394	402	391	390	
FTTP	621	642	666	692	744	878	906	929	984	
Satellite	6	5	6	5	5	18	16	11	11	
Fixed Wireless	713	713	765	771	825	870	916	943	969	
Mobile Wireless	69	67	70	79	77	91	98	100	97	
Power Line and Other ¹	5	*	*	0	*	-	-	-	-	
Total	1,687	1,673	1,722	1,714	1,773	1,813	1,865	1,874	1,901	

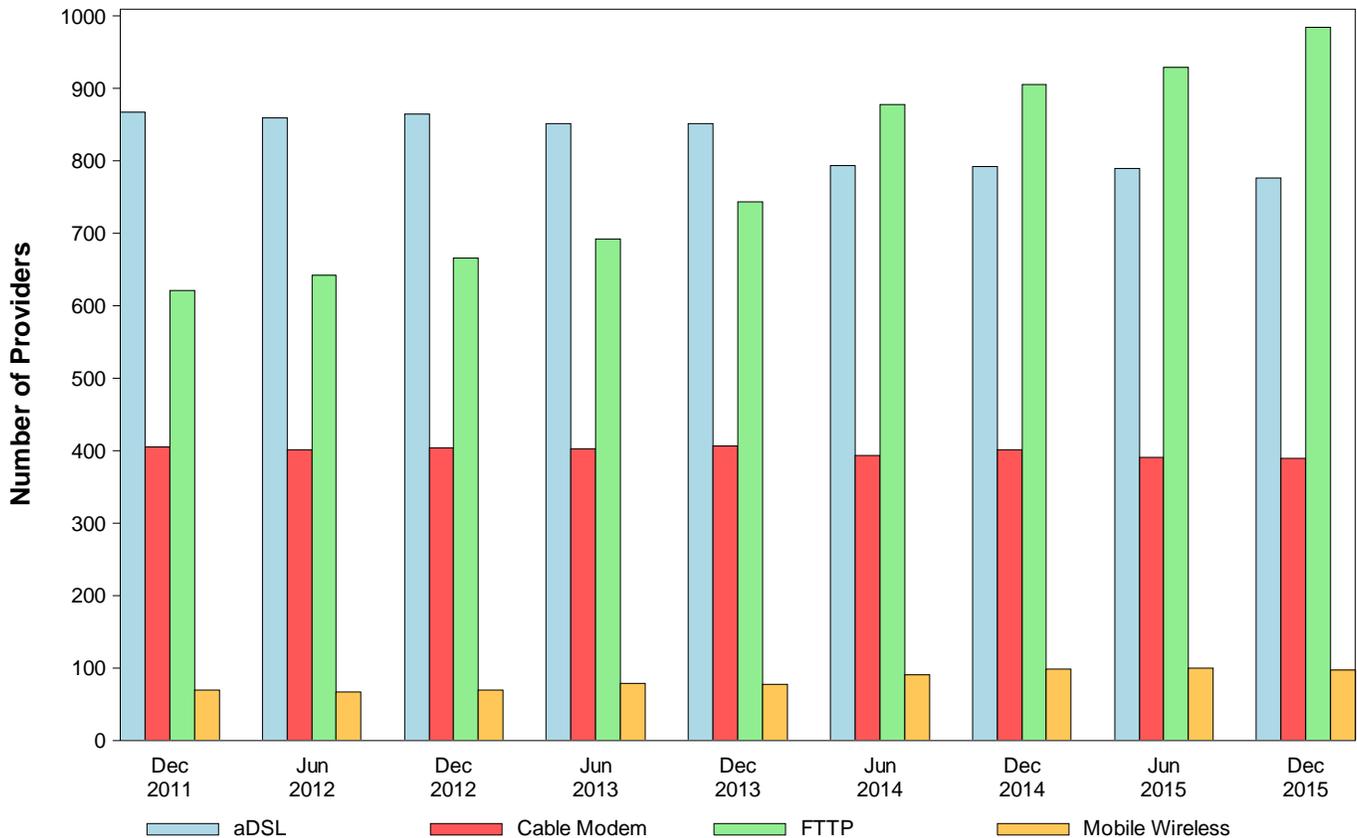
¹ For this Figure, the categories Power Line and All Other were combined with Other Wireline from June 2014 forward.

+ The June 2014 data have not been subjected to the typical quality checks (see Technical Notes).

Multiple Form 477 filers within a holding company structure count as one provider. * = 1-3 providers.

The Commission approved changes to the Form 477 in June 2013 that affect the data beginning in June 2014 (see Technical Notes). Some previously-published data may have been revised.

Figure 31
Nationwide Number of Providers of Connections over 200 kbps in at Least One Direction
Selected Technologies 2011-2015



SECTION 3
SUMMARY STATISTICS: THE STATES

Table of Contents

Figure 32	Residential Fixed Connections and Households by State as of December 31, 2015	29
Figure 33	Connections by Type of End User by State as of December 31, 2015	31
Figure 34	Connections by Technology by State as of December 31, 2015	32
Figure 35	Percentage of Fixed Connections by Downstream Speed by State as of December 31, 2015	34
Figure 36	Providers of Connections by Technology by State as of December 31, 2015	36

Figure 32
Residential Fixed Connections and Households by State as of December 31, 2015
(Connections and households, in thousands)

State	Households	At least 200 kbps in at least One Direction		At least 10 Mbps Down and 1 Mbps Up		At least 25 Mbps Down and 3 Mbps Up		At least 100 Mbps Down and 10 Mbps Up	
		Connections	Subscribership Ratio	Connections	Subscribership Ratio	Connections	Subscribership Ratio	Connections	Subscribership Ratio
Alabama	1,842	1,241	0.67	862	0.47	534	0.29	38	0.02
Alaska	252	202	0.80	135	0.54	*	*	*	*
American Samoa	10	*	*	0	0.00	0	0.00	0	0.00
Arizona	2,387	2,008	0.84	1,383	0.58	1,101	0.46	285	0.12
Arkansas	1,132	717	0.63	457	0.40	240	0.21	74	0.06
California	12,617	10,776	0.85	8,641	0.68	6,108	0.48	2,116	0.17
Colorado	1,998	1,771	0.89	1,183	0.59	1,099	0.55	*	*
Connecticut	1,356	1,161	0.86	992	0.73	789	0.58	211	0.16
Delaware	339	308	0.91	282	0.83	245	0.72	75	0.22
District of Columbia	267	228	0.85	198	0.74	186	0.70	*	*
Florida	7,218	6,577	0.91	5,389	0.75	3,790	0.53	817	0.11
Georgia	3,541	2,726	0.77	2,018	0.57	1,389	0.39	213	0.06
Guam	42	*	*	*	*	*	*	0	0.00
Hawaii	450	397	0.88	396	0.88	*	*	*	*
Idaho	585	459	0.78	223	0.38	164	0.28	9	0.02
Illinois	4,779	3,669	0.77	2,871	0.60	2,036	0.43	363	0.08
Indiana	2,492	1,828	0.73	1,304	0.52	825	0.33	138	0.06
Iowa	1,232	893	0.72	489	0.40	118	0.10	12	0.01
Kansas	1,112	851	0.77	606	0.54	360	0.32	128	0.12
Kentucky	1,702	1,203	0.71	769	0.45	274	0.16	19	0.01
Louisiana	1,719	1,189	0.69	895	0.52	577	0.34	122	0.07
Maine	553	460	0.83	318	0.57	109	0.20	*	*
Maryland	2,156	1,822	0.85	1,642	0.76	1,443	0.67	387	0.18
Massachusetts	2,538	2,232	0.88	2,026	0.80	1,875	0.74	608	0.24
Michigan	3,828	2,831	0.74	2,231	0.58	1,667	0.44	190	0.05
Minnesota	2,115	1,658	0.78	1,087	0.51	898	0.42	230	0.11
Mississippi	1,093	611	0.56	380	0.35	214	0.20	28	0.03
Missouri	2,361	1,702	0.72	1,170	0.50	700	0.30	173	0.07
Montana	408	314	0.77	173	0.42	*	*	#	0.00
Nebraska	731	550	0.75	357	0.49	239	0.33	34	0.05

Figure 32 - Continued
Residential Fixed Connections and Households by State as of December 31, 2015
(Connections and households, in thousands)

State	Households	At least 200 kbps in at least One Direction		At least 10 Mbps Down and 1 Mbps Up		At least 25 Mbps Down and 3 Mbps Up		At least 100 Mbps Down and 10 Mbps Up	
		Connections	Subscribership Ratio	Connections	Subscribership Ratio	Connections	Subscribership Ratio	Connections	Subscribership Ratio
Nevada	1,006	840	0.84	636	0.63	482	0.48	*	*
New Hampshire	520	465	0.89	381	0.73	299	0.58	*	*
New Jersey	3,188	2,839	0.89	2,620	0.82	2,489	0.78	579	0.18
New Mexico	765	536	0.70	261	0.34	234	0.31	79	0.10
New York	7,256	6,094	0.84	5,482	0.76	4,254	0.59	744	0.10
North Carolina	3,743	2,947	0.79	2,134	0.57	1,259	0.34	580	0.16
North Dakota	293	232	0.79	183	0.63	132	0.45	17	0.06
Northern Mariana Isl	16	*	*	0	0.00	0	0.00	0	0.00
Ohio	4,570	3,537	0.77	2,544	0.56	1,055	0.23	47	0.01
Oklahoma	1,450	978	0.67	669	0.46	393	0.27	91	0.06
Oregon	1,523	1,257	0.83	910	0.60	775	0.51	*	*
Pennsylvania	4,958	3,899	0.79	2,987	0.60	2,612	0.53	775	0.16
Puerto Rico	1,241	*	*	*	*	*	*	*	*
Rhode Island	410	342	0.84	327	0.80	*	*	*	*
South Carolina	1,796	1,357	0.76	1,034	0.58	499	0.28	26	0.01
South Dakota	327	247	0.76	197	0.60	141	0.43	14	0.04
Tennessee	2,487	1,736	0.70	1,363	0.55	1,021	0.41	167	0.07
Texas	9,014	6,874	0.76	5,296	0.59	3,138	0.35	1,390	0.15
Utah	896	775	0.86	490	0.55	427	0.48	167	0.19
Vermont	257	231	0.90	153	0.60	123	0.48	47	0.18
Virgin Islands	43	*	*	*	*	*	*	0	0.00
Virginia	3,042	2,456	0.81	2,059	0.68	1,725	0.57	391	0.13
Washington	2,645	2,291	0.87	1,666	0.63	1,511	0.57	*	*
West Virginia	742	510	0.69	335	0.45	275	0.37	*	*
Wisconsin	2,293	1,756	0.77	1,268	0.55	668	0.29	12	0.01
Wyoming	226	176	0.78	114	0.51	96	0.42	#	0.00
Total	117,564	93,428	0.79	71,779	0.61	51,454	0.44	13,313	0.11

= Rounds to Zero; * = Data withheld to maintain firm confidentiality.

Note: Figures may not sum to totals due to rounding.

Sources: FCC Form 477 (Connections); 2010-2014 ACS 5-year estimates; Census 2010.

Figure 33
Connections by Type of End User by State as of December 31, 2015
(Connections over 200 kbps in at least one direction, in thousands)

State	Connections		Percentages		Total
	Residential	Business	Residential	Business	
Alabama	4,341	560	88.6	11.4	4,901
Alaska	785	129	85.9	14.1	915
American Samoa	*	*	*	*	*
Arizona	6,007	946	86.4	13.6	6,952
Arkansas	2,619	364	87.8	12.2	2,983
California	37,458	6,860	84.5	15.5	44,318
Colorado	5,357	895	85.7	14.3	6,252
Connecticut	3,660	657	84.8	15.2	4,317
Delaware	1,055	155	87.2	12.8	1,210
District of Columbia	706	455	60.8	39.2	1,162
Florida	18,233	3,237	84.9	15.1	21,469
Georgia	9,061	1,506	85.7	14.3	10,567
Guam	105	23	82.2	17.8	128
Hawaii	1,485	196	88.3	11.7	1,682
Idaho	1,471	231	86.4	13.6	1,701
Illinois	12,311	2,153	85.1	14.9	14,464
Indiana	5,940	846	87.5	12.5	6,786
Iowa	2,826	479	85.5	14.5	3,304
Kansas	2,609	465	84.9	15.1	3,074
Kentucky	5,540	555	90.9	9.1	6,094
Louisiana	4,475	626	87.7	12.3	5,101
Maine	1,209	191	86.3	13.7	1,401
Maryland	5,823	1,000	85.3	14.7	6,823
Massachusetts	6,746	1,217	84.7	15.3	7,964
Michigan	8,555	1,699	83.4	16.6	10,255
Minnesota	5,217	927	84.9	15.1	6,144
Mississippi	2,668	285	90.4	9.6	2,953
Missouri	5,523	966	85.1	14.9	6,489
Montana	940	127	88.1	11.9	1,066
Nebraska	1,638	339	82.8	17.2	1,977
Nevada	2,665	382	87.5	12.5	3,047
New Hampshire	1,314	208	86.4	13.6	1,521
New Jersey	9,323	1,735	84.3	15.7	11,059
New Mexico	1,752	249	87.6	12.4	2,001
New York	19,078	3,425	84.8	15.2	22,503
North Carolina	9,267	1,499	86.1	13.9	10,765
North Dakota	723	126	85.1	14.9	849
Northern Mariana Isl	*	*	*	*	*
Ohio	10,864	1,743	86.2	13.8	12,607
Oklahoma	3,510	548	86.5	13.5	4,059
Oregon	3,850	638	85.8	14.2	4,488
Pennsylvania	11,908	1,889	86.3	13.7	13,797
Puerto Rico	3,028	266	91.9	8.1	3,293
Rhode Island	994	168	85.5	14.5	1,163
South Carolina	4,270	604	87.6	12.4	4,874
South Dakota	767	99	88.5	11.5	867
Tennessee	5,858	944	86.1	13.9	6,802
Texas	24,497	4,514	84.4	15.6	29,011
Utah	2,611	453	85.2	14.8	3,064
Vermont	605	117	83.8	16.2	722
Virgin Islands	96	15	86.6	13.4	111
Virginia	7,763	1,469	84.1	15.9	9,231
Washington	7,134	1,187	85.7	14.3	8,321
West Virginia	1,586	188	89.4	10.6	1,774
Wisconsin	5,178	913	85.0	15.0	6,090
Wyoming	581	77	88.3	11.7	659
Total	303,653	51,559	85.5	14.5	355,212

= Rounds to Zero.

* = Data withheld to maintain firm confidentiality.

Figures may not sum to totals due to rounding.

Source: FCC Form 477.

Figure 34
Connections by Technology by State as of December 31, 2015
(Connections over 200 kbps in at least one direction, in thousands)

<i>State</i>	<i>ADSL</i>	<i>SDSL</i>	<i>Other Wireline¹</i>	<i>Cable Modem</i>	<i>Fiber</i>	<i>Satellite</i>	<i>Fixed Wireless</i>	<i>Mobile Wireless</i>	<i>Total</i>
Alabama	525	3	*	720	30	*	4	3,543	4,901
Alaska	76	#	3	*	3	*	7	677	915
American Samoa	0	0	0	*	*	0	*	*	*
Arizona	626	#	*	1,353	108	*	29	4,793	6,952
Arkansas	339	#	*	362	16	*	6	2,201	2,983
California	3,755	9	*	6,769	934	*	60	32,543	44,318
Colorado	589	#	*	1,084	150	*	58	4,315	6,252
Connecticut	*	#	4	891	8	*	*	3,044	4,317
Delaware	*	#	3	195	*	*	0	875	1,210
District of Columbia	42	1	7	*	*	*	*	897	1,162
Florida	1,836	#	*	4,558	625	*	14	14,303	21,469
Georgia	1,108	1	*	1,696	91	*	1	7,565	10,567
Guam	*	0	*	*	*	0	0	89	128
Hawaii	*	3	1	*	26	*	4	1,252	1,682
Idaho	203	#	*	193	44	*	45	1,200	1,701
Illinois	1,342	2	*	2,459	54	*	65	10,464	14,464
Indiana	717	1	*	1,013	147	*	41	4,805	6,786
Iowa	340	1	*	444	130	*	31	2,325	3,304
Kansas	268	#	*	489	110	*	36	2,144	3,074
Kentucky	464	#	*	704	67	*	17	4,783	6,094
Louisiana	426	#	*	744	59	*	6	3,799	5,101
Maine	130	2	*	354	7	*	4	892	1,401
Maryland	*	1	16	997	*	*	3	4,841	6,823
Massachusetts	*	1	19	1,712	*	*	2	5,523	7,964
Michigan	893	4	*	2,001	17	*	49	7,174	10,255
Minnesota	577	4	*	1,006	146	*	27	4,340	6,144
Mississippi	320	*	2	293	6	*	2	2,270	2,953
Missouri	782	#	*	822	124	*	33	4,640	6,489
Montana	112	1	*	181	19	*	22	715	1,066
Nebraska	163	#	*	367	42	*	20	1,373	1,977

Figure 34 - Continued
Connections by Technology by State as of December 31, 2015
(Connections over 200 kbps in at least one direction, in thousands)

<i>State</i>	<i>ADSL</i>	<i>SDSL</i>	<i>Other Wireline¹</i>	<i>Cable Modem</i>	<i>Fiber</i>	<i>Satellite</i>	<i>Fixed Wireless</i>	<i>Mobile Wireless</i>	<i>Total</i>
Nevada	249	#	6	*	9	*	13	2,130	3,047
New Hampshire	87	1	*	399	21	*	#	1,001	1,521
New Jersey	237	1	27	1,953	*	*	#	7,922	11,059
New Mexico	278	#	*	247	26	*	19	1,413	2,001
New York	577	3	38	4,607	*	*	5	15,750	22,503
North Carolina	1,004	#	*	2,035	96	*	4	7,548	10,765
North Dakota	59	1	*	129	63	*	5	588	849
Northern Mariana Isl	*	0	*	*	*	0	*	*	*
Ohio	1,172	1	*	2,419	131	*	39	8,776	12,607
Oklahoma	381	#	*	556	31	*	38	2,986	4,059
Oregon	325	1	*	842	145	*	21	3,115	4,488
Pennsylvania	777	1	23	2,560	*	*	4	9,531	13,797
Puerto Rico	*	0	*	*	7	*	2	2,604	3,293
Rhode Island	*	#	2	*	*	*	*	788	1,163
South Carolina	473	#	*	879	73	*	3	3,397	4,874
South Dakota	55	*	#	154	46	*	13	593	867
Tennessee	571	3	*	1,083	160	*	8	4,894	6,802
Texas	2,799	1	*	3,522	741	*	128	21,533	29,011
Utah	231	#	*	420	123	*	58	2,222	3,064
Vermont	119	*	3	132	18	*	1	443	722
Virgin Islands	*	0	*	*	*	*	*	86	111
Virginia	373	1	*	1,377	816	*	15	6,539	9,231
Washington	548	1	*	1,660	181	*	23	5,839	8,321
West Virginia	*	*	1	319	9	*	2	1,220	1,774
Wisconsin	657	6	*	1,089	61	*	37	4,184	6,090
Wyoming	54	1	*	104	8	*	18	461	659
Total	28,134	60	693	59,696	10,492	2,071	1,049	253,017	355,212

¹ PowerLine and Other are summarized with Other Wireline to maintain firm confidentiality. See Technical Notes at the end of the report for a description of Form 477 technology categories and other reporting requirements.

= Rounds to Zero.

* = Data withheld to maintain firm confidentiality.

Figures may not sum to totals due to rounding.

Source: FCC Form 477.

Figure 35
Percentage of Fixed Connections by Downstream Speed by State as of December 31, 2015

State	Over 200 kbps Upstream and				
	% over 200 kbps Downstream	% at least 3 Mbps Downstream	% at least 10 Mbps Downstream	% at least 25 Mbps Downstream	% at least 100 Mbps Downstream
Alabama	99.0	91.5	71.5	43.3	4.5
Alaska	96.5	82.4	64.5	30.2	12.2
American Samoa	*	*	*	*	*
Arizona	99.6	95.2	81.0	53.2	17.8
Arkansas	98.9	90.2	66.7	34.0	14.9
California	99.6	95.6	77.9	54.0	18.9
Colorado	99.7	93.3	81.0	59.1	24.8
Connecticut	99.1	98.5	84.0	65.9	17.3
Delaware	99.7	97.5	90.2	78.4	23.2
District of Columbia	99.8	96.2	83.5	76.4	26.3
Florida	99.4	95.6	84.5	56.4	12.2
Georgia	98.8	93.5	74.1	49.9	7.6
Guam	*	*	*	*	*
Hawaii	100.0	99.7	99.3	89.1	76.3
Idaho	99.3	91.2	64.3	35.0	24.6
Illinois	99.5	96.1	77.4	54.3	12.3
Indiana	99.1	94.6	72.3	43.9	7.3
Iowa	99.4	90.0	63.7	26.8	3.2
Kansas	99.6	93.4	71.6	40.4	15.4
Kentucky	98.6	89.1	63.8	22.2	1.6
Louisiana	98.9	92.6	74.6	47.2	13.5
Maine	98.5	90.0	67.2	22.5	1.7
Maryland	99.7	97.0	88.2	76.7	20.3
Massachusetts	99.8	97.2	89.2	81.0	25.8
Michigan	99.1	95.8	78.0	56.6	6.6
Minnesota	99.5	93.0	75.2	54.2	13.4
Mississippi	98.4	89.4	62.7	33.9	14.0
Missouri	99.2	92.1	72.7	41.9	30.5
Montana	99.3	85.8	60.3	48.9	0.3
Nebraska	99.5	93.5	69.0	41.8	7.2

Figure 35 - Continued
Percentage of Fixed Connections by Downstream Speed by State as of December 31, 2015

<i>State</i>	<i>Over 200 kbps Upstream and</i>				
	<i>% over 200 kbps Downstream</i>	<i>% at least 3 Mbps Downstream</i>	<i>% at least 10 Mbps Downstream</i>	<i>% at least 25 Mbps Downstream</i>	<i>% at least 100 Mbps Downstream</i>
Nevada	99.8	96.8	83.2	56.6	10.8
New Hampshire	98.8	93.8	79.8	60.5	24.0
New Jersey	99.7	97.6	91.3	85.0	19.5
New Mexico	99.5	89.1	65.8	41.4	15.9
New York	99.6	96.7	87.8	67.6	12.0
North Carolina	99.2	92.3	76.0	41.0	19.0
North Dakota	99.8	95.3	80.3	57.5	14.1
Northern Mariana Isl	*	*	*	*	*
Ohio	99.5	92.2	72.0	28.7	1.4
Oklahoma	99.4	94.3	67.9	38.8	14.0
Oregon	99.5	93.4	79.4	60.3	20.4
Pennsylvania	99.5	94.5	77.8	65.1	18.9
Puerto Rico	99.9	68.6	36.5	7.2	0.4
Rhode Island	99.6	98.3	93.2	78.0	9.9
South Carolina	99.2	92.8	76.2	36.5	2.3
South Dakota	99.5	93.9	81.4	57.5	6.9
Tennessee	99.0	94.5	78.8	56.8	9.7
Texas	99.6	94.8	76.1	43.8	20.7
Utah	99.8	94.9	76.1	53.0	20.5
Vermont	98.1	83.8	62.4	46.7	17.2
Virgin Islands	99.9	81.8	23.0	*	*
Virginia	99.4	95.6	83.1	67.2	15.4
Washington	99.4	93.9	79.2	63.4	26.2
West Virginia	98.1	96.1	63.2	50.8	35.3
Wisconsin	98.8	91.5	74.6	37.3	1.1
Wyoming	99.3	88.4	70.2	52.6	0.7
Total	99.4	94.3	78.1	53.5	15.1

Figure 36
Providers of Connections by Technology by State as of December 31, 2015
 (Connections over 200 kbps in at least one direction, in thousands)

<i>State</i>	<i>ADSL</i>	<i>SDSL</i>	<i>Other Wireline¹</i>	<i>Cable Modem</i>	<i>Fiber</i>	<i>Satellite</i>	<i>Fixed Wireless</i>	<i>Mobile Wireless</i>	<i>Total</i>
Alabama	28	11	*	23	37	*	20	6	89
Alaska	14	4	13	*	9	*	12	7	36
American Samoa	0	0	0	*	*	0	*	*	*
Arizona	28	6	*	17	33	*	33	7	98
Arkansas	24	4	*	18	30	*	17	4	75
California	39	15	*	29	51	*	77	6	166
Colorado	40	9	*	16	49	*	51	10	129
Connecticut	*	8	19	10	19	*	*	4	45
Delaware	*	4	16	4	*	*	0	4	28
District of Columbia	7	6	19	*	*	*	*	4	44
Florida	30	13	*	25	46	*	30	5	109
Georgia	30	11	*	34	60	*	17	4	120
Guam	*	0	*	*	*	0	0	4	4
Hawaii	*	5	9	*	9	*	4	5	23
Idaho	25	7	*	15	29	*	33	9	78
Illinois	59	12	*	22	80	*	75	9	179
Indiana	41	8	*	14	52	*	50	5	112
Iowa	108	21	*	43	123	*	79	32	220
Kansas	33	13	*	27	55	*	44	9	110
Kentucky	23	8	*	29	45	*	27	7	101
Louisiana	19	4	*	18	28	*	13	5	65
Maine	16	8	*	8	18	*	6	5	40
Maryland	*	10	31	17	*	*	18	6	80
Massachusetts	*	10	29	12	*	*	17	4	68
Michigan	36	12	*	25	52	*	41	6	126
Minnesota	49	15	*	21	70	*	47	6	130
Mississippi	19	*	18	15	17	*	14	5	60
Missouri	41	13	*	22	52	*	61	8	143
Montana	25	9	*	9	27	*	27	5	63
Nebraska	33	4	*	22	45	*	36	8	92

Figure 36 - Continued
Providers of Connections by Technology by State as of December 31, 2015
(Connections over 200 kbps in at least one direction, in thousands)

<i>State</i>	<i>ADSL</i>	<i>SDSL</i>	<i>Other Wireline¹</i>	<i>Cable Modem</i>	<i>Fiber</i>	<i>Satellite</i>	<i>Fixed Wireless</i>	<i>Mobile Wireless</i>	<i>Total</i>
Nevada	19	10	26	*	23	*	15	6	66
New Hampshire	15	10	*	7	19	*	4	5	43
New Jersey	20	8	34	11	*	*	8	4	65
New Mexico	25	6	*	11	23	*	24	9	68
New York	42	11	37	22	*	*	23	4	106
North Carolina	25	9	*	28	45	*	19	7	96
North Dakota	28	10	*	7	27	*	17	7	56
Northern Mariana Isl	*	0	*	*	*	0	*	*	*
Ohio	40	9	*	32	56	*	45	5	138
Oklahoma	37	8	*	12	36	*	38	11	101
Oregon	40	13	*	16	48	*	42	6	109
Pennsylvania	36	10	39	31	*	*	21	8	118
Puerto Rico	*	0	*	*	6	*	6	5	17
Rhode Island	*	6	11	*	*	*	*	4	27
South Carolina	19	4	*	17	26	*	11	6	55
South Dakota	26	*	14	7	29	*	25	8	75
Tennessee	26	11	*	25	40	*	24	7	99
Texas	67	21	*	42	93	*	119	11	235
Utah	20	9	*	12	23	*	29	8	77
Vermont	13	*	11	7	17	*	5	5	37
Virgin Islands	*	0	*	*	*	*	*	4	8
Virginia	31	12	*	22	45	*	31	7	107
Washington	31	10	*	27	50	*	54	6	122
West Virginia	*	*	17	16	15	*	12	7	56
Wisconsin	48	11	*	22	57	*	45	7	128
Wyoming	18	5	*	6	16	*	24	8	53
Total	776	182	250	390	984	11	969	97	1,901

¹ Power Line and Other are summarized with Other Wireline. See Technical Notes at the end of the report for a description of Form 477 technology categories and other reporting requirements.

= Rounds to Zero.

* = Data withheld to maintain firm confidentiality.

Figures may not sum to totals due to rounding.

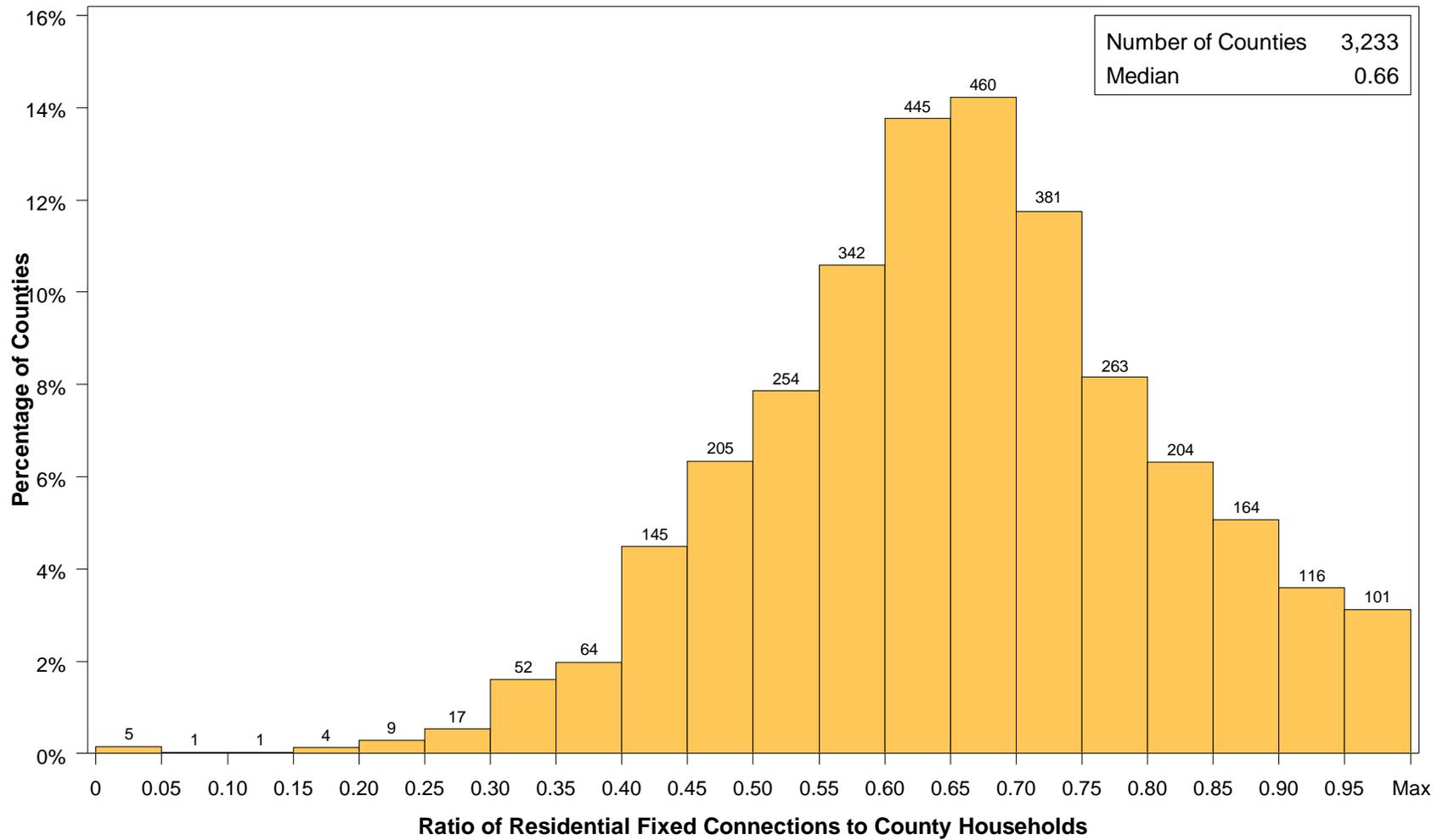
Source: FCC Form 477.

SECTION 4
SUMMARY STATISTICS: COUNTIES AND CENSUS TRACTS

Table of Contents

Figure 37	Distribution of Counties by Ratio of Residential Fixed Connections over 200 kbps in at Least One Direction to County Households as of December 31, 2015	39
Figure 38	Distribution of Counties by Ratio of Residential Fixed Connections over 200 kbps in at Least One Direction to County Households by Technology as of December 31, 2015	40
Figure 39	Distribution of Census Tracts by Ratio of Residential Fixed Connections over 200 kbps in at Least One Direction to Tract Households as of December 31, 2015	41
Figure 40	Distribution of Census Tracts by Ratio of Residential Fixed Connections over 200 kbps in at Least One Direction to Tract Households by Technology as of December 31, 2015	42
Figure 41	Percentage of Developed Census Blocks with Residential Fixed Connections by Technology as of December 31, 2015	43
Figure 42	Distribution of Counties by Ratio of Residential Fixed Connections to County Households by State as of December 31, 2015	44
Figure 43	Distribution of Census Tracts by Ratio of Residential Fixed Connections to Tract Households by State as of December 31, 2015	46

Figure 37
Distribution of Counties by Ratio of Residential Fixed Connections over 200 kbps in at Least One Direction to County Households as of December 31, 2015



Note: Ratios over 1 were set to 1. See Technical Notes at the end of the report.
 Sources: FCC Form 477; 2010-2014 ACS 5-year estimates; and Census 2010.

Figure 38
Distribution of Counties by Ratio of Residential Fixed Connections over 200 kbps in at Least One Direction to County Households by Technology as of December 31, 2015

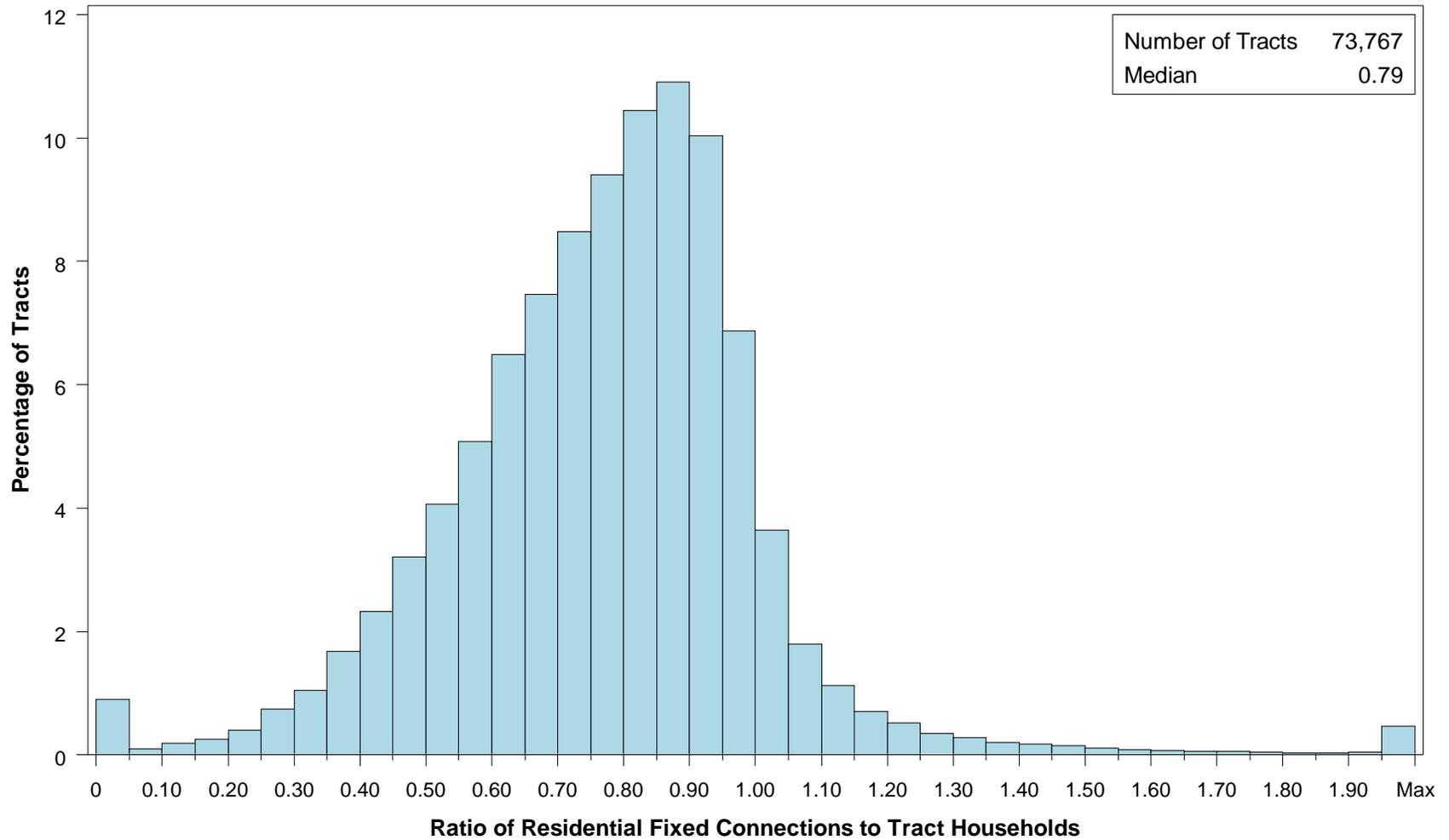
<i>Technology</i>	<i>Ratio of Residential Fixed Connections to County Households</i>										<i>100% or more</i>
	<i>Zero</i>	<i>Greater than 0 and no more than 5%</i>	<i>Greater than 5 and no more than 10%</i>	<i>Greater than 10 and no more than 20%</i>	<i>Greater than 20 and no more than 30%</i>	<i>Greater than 30 and no more than 40%</i>	<i>Greater than 40 and no more than 50%</i>	<i>Greater than 50 and no more than 60%</i>	<i>Greater than 60 and no more than 80%</i>	<i>Greater than 80 and no more than 100%</i>	
aDSL	0.8	4.5	5.8	25.2	31.9	19.1	8.2	2.8	1.5	0.2	0.1
sDSL	86.5	13.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Wireline	89.1	10.6	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cable Modem	12.5	7.1	7.1	16.1	14.9	14.3	11.4	10.1	5.5	0.6	0.2
FTTP	34.2	41.5	7.3	6.8	3.8	2.3	1.7	1.1	1.1	0.0	0.0
Satellite	0.9	62.6	24.4	10.4	1.5	0.2	0.0	0.0	0.0	0.0	0.0
Fixed Wireless	30.2	51.4	10.1	6.2	1.4	0.5	0.1	0.0	0.0	0.0	0.0
Total	0.2	0.0	0.0	0.2	0.8	3.6	10.8	18.4	47.9	16.2	1.9

¹ Power Line and Other are summarized with Other Wireline. See Technical Notes at the end of the report for a description of Form 477 technology categories and other reporting requirements.

Note: Figures may not sum to totals due to rounding.

Sources: FCC Form 477; 2010-2014 ACS 5-year estimates; and Census 2010.

Figure 39
Distribution of Census Tracts by Ratio of Residential Fixed Connections over 200 kbps in at Least One Direction to Tract Households as of December 31, 2015



Note: Ratios over 2 were set to 2. See Technical Notes at the end of the report.
 Sources: FCC Form 477; 2010-2014 ACS 5-year estimates; and Census 2010.

Figure 40
Distribution of Census Tracts by Ratio of Residential Fixed Connections over 200 kbps in at Least One Direction to Tract Households by Technology as of December 31, 2015

<i>Technology</i>	<i>Ratio of Residential Fixed Connections to Tract Households</i>										
	<i>Zero</i>	<i>Greater than 0 and no more than 5%</i>	<i>Greater than 5 and no more than 10%</i>	<i>Greater than 10 and no more than 20%</i>	<i>Greater than 20 and no more than 30%</i>	<i>Greater than 30 and no more than 40%</i>	<i>Greater than 40 and no more than 50%</i>	<i>Greater than 50 and no more than 60%</i>	<i>Greater than 60 and no more than 80%</i>	<i>Greater than 80 and no more than 100%</i>	<i>100% or more</i>
aDSL	1.5	14.6	11.6	25.3	21.6	14.3	6.8	2.6	1.3	0.2	0.2
sDSL	97.6	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Wireline	98.9	0.9	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cable Modem	5.2	3.0	2.0	4.8	9.2	14.9	17.9	17.2	19.5	4.9	1.5
FTTP	58.6	16.9	3.5	4.9	3.5	3.9	3.8	2.6	1.8	0.2	0.1
Satellite	25.8	63.7	5.6	3.6	0.9	0.3	0.1	0.0	0.0	0.0	0.0
Fixed Wireless	76.9	18.0	2.4	1.8	0.6	0.2	0.1	0.0	0.0	0.0	0.0
Total	0.8	0.1	0.1	0.5	1.1	2.7	5.5	9.1	31.8	38.3	9.8

¹ Power Line and Other are summarized with Other Wireline. See Technical Notes at the end of the report for a description of Form 477 technology categories and other reporting requirements.

Note: Figures may not sum to totals due to rounding.

Sources: FCC Form 477; 2010-2014 ACS 5-year estimates; and Census 2010.

Figure 41
Percentage of Developed Census Blocks with Residential Fixed Service by Technology as of December 31, 2015
(Internet Access Service over 200 kbps in at least one direction)

<i>Technology</i>	<i>Number of Providers</i>							
	<i>Zero</i>	<i>One</i>	<i>Two</i>	<i>Three</i>	<i>Four</i>	<i>Five</i>	<i>Six</i>	<i>Seven or More</i>
aDSL	25.8	69.7	4.3	0.2	0.0	0.0	0.0	0.0
sDSL	99.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Wireline ¹	98.2	1.8	0.0	0.0	0.0	0.0	0.0	0.0
Cable Modem	34.4	61.7	3.6	0.2	0.0	0.0	0.0	0.0
FTTP	84.6	15.2	0.3	0.0	0.0	0.0	0.0	0.0
Satellite	0.1	0.9	58.6	40.4	0.0	0.0	0.0	0.0
Fixed Wireless	61.4	24.9	9.2	3.9	0.4	0.1	0.0	0.0
aDSL and/or Cable Modem and/or FTTP	13.5	25.6	52.0	8.1	0.7	0.0	0.0	0.0
Any Technology	0.0	0.2	3.8	14.3	34.3	30.2	11.4	5.9

¹ Power Line and Other are summarized with Other Wireline. See Technical Notes at the end of the report for a description of Form 477 technology categories and other reporting requirements.

Note: Figures may not sum to totals due to rounding. The number of providers in a census block does not necessarily reflect the number of choices available to a particular household, and does not purport to measure competition. Providers may list a census block on Form 477 if service can be provided to at least one location in the block. Developed census blocks are those with housing units based on the 2010 census.

Sources: FCC Form 477 and Census 2010.

Figure 42
Distribution of Counties by Ratio of Residential Fixed Connections to County Households by State as of December 31, 2015
(Connections over 200 kbps in at least one direction)

State	Counties	Ratio of Residential Fixed Connections over 200 kbps in at Least One Direction to County Households										
		Zero	Greater than 0 and no more than 5%	Greater than 5 and no more than 10%	Greater than 10 and no more than 20%	Greater than 20 and no more than 30%	Greater than 30 and no more than 40%	Greater than 40 and no more than 50%	Greater than 50 and no more than 60%	Greater than 60 and no more than 80%	Greater than 80 and no more than 100%	100% or more
Alabama	67	0	0	0	0	1	3	17	22	20	4	0
Alaska	29	0	0	0	0	1	2	6	2	12	5	1
American Samoa	5	3	0	1	1	0	0	0	0	0	0	0
Arizona	15	0	0	0	0	0	0	2	0	9	4	0
Arkansas	75	0	0	0	0	0	6	32	21	15	1	0
California	58	0	0	0	0	0	1	0	1	26	29	1
Colorado	64	0	0	0	0	1	1	4	6	21	21	10
Connecticut	8	0	0	0	0	0	0	0	0	1	7	0
Delaware	3	0	0	0	0	0	0	0	0	0	3	0
District of Columbia	1	0	0	0	0	0	0	0	0	0	1	0
Florida	67	0	0	0	0	0	0	2	11	14	29	11
Georgia	159	0	0	0	1	3	15	26	40	42	29	3
Guam	1	0	0	0	0	0	0	0	0	0	1	0
Hawaii	5	1	0	0	0	0	0	0	0	1	3	0
Idaho	44	0	0	0	0	0	0	1	7	29	6	1
Illinois	102	0	0	0	0	1	1	3	22	64	11	0
Indiana	92	0	0	0	0	0	0	3	21	59	9	0
Iowa	99	0	0	0	0	0	0	2	15	76	6	0
Kansas	105	0	0	0	0	0	0	6	19	69	11	0
Kentucky	120	0	0	0	0	1	3	14	36	60	6	0
Louisiana	64	0	0	0	0	1	6	14	12	27	4	0
Maine	16	0	0	0	0	0	0	0	1	7	8	0
Maryland	24	0	0	0	0	0	0	1	2	9	11	1
Massachusetts	14	0	0	0	0	0	0	0	0	2	9	3
Michigan	83	0	0	0	0	0	0	5	12	55	10	1
Minnesota	87	0	0	0	0	0	0	3	4	65	15	0
Mississippi	82	0	0	0	2	7	22	30	9	12	0	0
Missouri	115	0	0	0	0	1	4	19	33	51	7	0
Montana	56	0	0	0	0	0	0	0	9	35	12	0
Nebraska	93	0	0	0	0	0	1	12	22	56	2	0

Figure 42 - Continued
Distribution of Counties by Ratio of Residential Fixed Connections to County Households by State as of December 31, 2015
(Connections over 200 kbps in at least one direction)

State	Counties	Ratio of Residential Fixed Connections over 200 kbps in at Least One Direction to County Households										
		Zero	Greater than 0 and no more than 5%	Greater than 5 and no more than 10%	Greater than 10 and no more than 20%	Greater than 20 and no more than 30%	Greater than 30 and no more than 40%	Greater than 40 and no more than 50%	Greater than 50 and no more than 60%	Greater than 60 and no more than 80%	Greater than 80 and no more than 100%	100% or more
Nevada	17	0	0	0	0	0	2	0	4	8	3	0
New Hampshire	10	0	0	0	0	0	0	0	0	1	9	0
New Jersey	21	0	0	0	0	0	0	0	0	3	17	1
New Mexico	33	0	0	0	0	0	0	7	3	19	4	0
New York	62	0	0	0	0	0	0	0	3	38	19	2
North Carolina	100	0	0	0	0	0	0	4	17	56	18	5
North Dakota	53	0	0	0	0	0	0	2	4	36	9	2
Northern Mariana Isl	4	1	0	0	0	1	2	0	0	0	0	0
Ohio	88	0	0	0	0	0	0	3	10	58	17	0
Oklahoma	77	0	0	0	0	1	7	17	20	30	2	0
Oregon	36	0	0	0	0	0	0	1	2	21	11	1
Pennsylvania	67	0	0	0	0	0	0	0	8	43	15	1
Puerto Rico	78	0	0	0	0	3	15	28	28	4	0	0
Rhode Island	5	0	0	0	0	0	0	0	0	0	5	0
South Carolina	46	0	0	0	0	0	2	10	8	19	5	2
South Dakota	66	0	0	0	0	0	0	2	9	46	9	0
Tennessee	95	0	0	0	0	1	3	12	39	33	7	0
Texas	254	0	0	0	0	0	7	42	70	110	22	3
Utah	29	0	0	0	0	1	2	0	2	10	11	3
Vermont	14	0	0	0	0	0	0	0	0	4	8	2
Virgin Islands	3	0	0	0	0	0	1	1	0	0	1	0
Virginia	133	0	0	0	1	1	9	16	23	53	27	3
Washington	39	0	0	0	0	0	1	0	2	18	17	1
West Virginia	55	0	0	0	0	1	0	3	11	34	6	0
Wisconsin	72	0	0	0	0	0	0	0	3	53	16	0
Wyoming	23	0	0	0	0	0	0	0	3	15	3	2
Total	3,233	5	0	1	5	26	116	350	596	1549	525	60

Note: Figures may not sum to totals due to rounding. See Technical Notes at the end of the report.

Sources: FCC Form 477; 2010-2014 ACS 5-year estimates (Households for U.S. and District of Columbia); Census 2010 (Households for Puerto Rico, American Samoa, Guam, Northern Mariana Islands and U.S. Virgin Islands).

Figure 43
Distribution of Census Tracts by Ratio of Residential Fixed Connections to Tract Households by State as of December 31, 2015
(Connections over 200 kbps in at least one direction)

State	Tracts	Ratio of Residential Fixed Connections over 200 kbps in at Least One Direction to Tract Households										
		Zero	Greater than 0 and no more than 5%	Greater than 5 and no more than 10%	Greater than 10 and no more than 20%	Greater than 20 and no more than 30%	Greater than 30 and no more than 40%	Greater than 40 and no more than 50%	Greater than 50 and no more than 60%	Greater than 60 and no more than 80%	Greater than 80 and no more than 100%	100% or more
Alabama	1,179	4	0	1	4	37	102	189	210	379	195	58
Alaska	167	2	0	0	1	7	5	6	11	54	70	11
American Samoa	18	4	6	2	3	1	0	0	0	2	0	0
Arizona	1,526	21	10	6	11	13	35	53	114	375	587	301
Arkansas	686	2	0	2	7	25	71	148	113	198	99	21
California	8,036	53	3	5	10	26	74	136	406	2,078	4,441	804
Colorado	1,249	14	0	0	1	1	8	12	55	330	611	217
Connecticut	829	2	0	0	0	0	6	6	46	184	491	94
Delaware	215	1	0	0	0	1	0	1	13	50	103	46
District of Columbia	179	3	0	0	0	0	1	3	14	61	64	33
Florida	4,199	39	0	0	4	4	33	99	208	944	1,804	1,064
Georgia	1,964	10	2	0	8	35	92	161	257	583	638	178
Guam	56	5	1	1	5	3	1	5	7	5	7	16
Hawaii	326	13	0	0	3	3	5	7	10	68	158	59
Idaho	298	1	0	0	0	4	2	7	21	148	95	20
Illinois	3,121	7	0	1	4	20	74	209	337	1,205	1,152	112
Indiana	1,508	5	2	0	2	8	31	115	258	654	370	63
Iowa	825	3	0	1	1	2	9	40	110	491	146	22
Kansas	770	11	0	0	1	3	12	43	119	317	216	48
Kentucky	1,115	9	2	2	13	18	43	85	211	421	262	49
Louisiana	1,136	11	0	1	2	27	78	136	182	406	252	41
Maine	351	0	0	0	2	3	2	1	14	144	143	42
Maryland	1,394	8	0	0	0	3	30	56	87	307	753	150
Massachusetts	1,471	13	0	1	1	1	3	9	40	333	914	156
Michigan	2,767	31	0	0	17	59	155	203	275	940	994	93
Minnesota	1,335	4	0	0	3	3	12	44	90	599	521	59
Mississippi	661	4	0	3	9	47	131	140	92	162	61	12
Missouri	1,393	5	0	0	6	15	69	153	204	465	399	77
Montana	271	2	1	0	1	0	2	7	32	120	89	17
Nebraska	532	3	0	0	0	0	3	34	70	259	118	45

Figure 43 - Continued
Distribution of Census Tracts by Ratio of Residential Fixed Connections to Tract Households by State as of December 31, 2015
(Connections over 200 kbps in at least one direction)

State	Tracts	Ratio of Residential Fixed Connections over 200 kbps in at Least One Direction to Tract Households										
		Zero	Greater than 0 and no more than 5%	Greater than 5 and no more than 10%	Greater than 10 and no more than 20%	Greater than 20 and no more than 30%	Greater than 30 and no more than 40%	Greater than 40 and no more than 50%	Greater than 50 and no more than 60%	Greater than 60 and no more than 80%	Greater than 80 and no more than 100%	100% or more
Nevada	683	5	0	1	2	4	16	21	65	185	277	107
New Hampshire	294	2	0	0	0	0	1	1	3	51	192	44
New Jersey	2,004	10	0	0	0	2	6	8	31	461	1,201	285
New Mexico	499	1	5	0	9	12	13	54	69	190	126	20
New York	4,900	87	3	2	14	20	29	103	238	1,567	2,238	599
North Carolina	2,183	19	2	2	0	9	29	115	265	816	663	263
North Dakota	205	0	0	0	0	1	1	7	10	114	54	18
Northern Mariana Isl	22	2	0	0	1	5	7	5	1	1	0	0
Ohio	2,946	7	0	0	4	20	82	195	285	1,180	990	183
Oklahoma	1,046	1	3	0	15	35	72	153	167	325	212	63
Oregon	827	2	0	0	0	3	4	15	31	318	388	66
Pennsylvania	3,217	25	0	2	4	7	25	80	270	1,357	1,230	217
Puerto Rico	903	26	34	30	112	160	132	133	83	84	38	71
Rhode Island	241	1	0	0	0	0	0	1	1	81	142	15
South Carolina	1,097	10	0	0	2	17	49	113	161	357	274	114
South Dakota	222	0	0	1	0	1	3	6	19	126	55	11
Tennessee	1,497	22	1	1	7	31	92	161	254	523	323	82
Texas	5,253	38	0	0	26	97	246	571	747	1,515	1,441	572
Utah	588	4	2	3	1	0	6	3	16	147	322	84
Vermont	184	1	0	0	0	0	1	0	0	49	103	30
Virgin Islands	29	0	0	1	4	5	3	6	7	1	1	1
Virginia	1,895	24	0	0	5	24	73	102	170	435	807	255
Washington	1,446	3	1	0	2	7	10	22	37	362	825	177
West Virginia	484	0	1	1	5	11	16	41	80	216	86	27
Wisconsin	1,393	3	1	0	3	0	11	59	122	679	470	45
Wyoming	132	1	0	0	0	1	2	4	7	65	46	6
Total	73,767	584	80	70	335	841	2,018	4,087	6,745	23,487	28,257	7,263

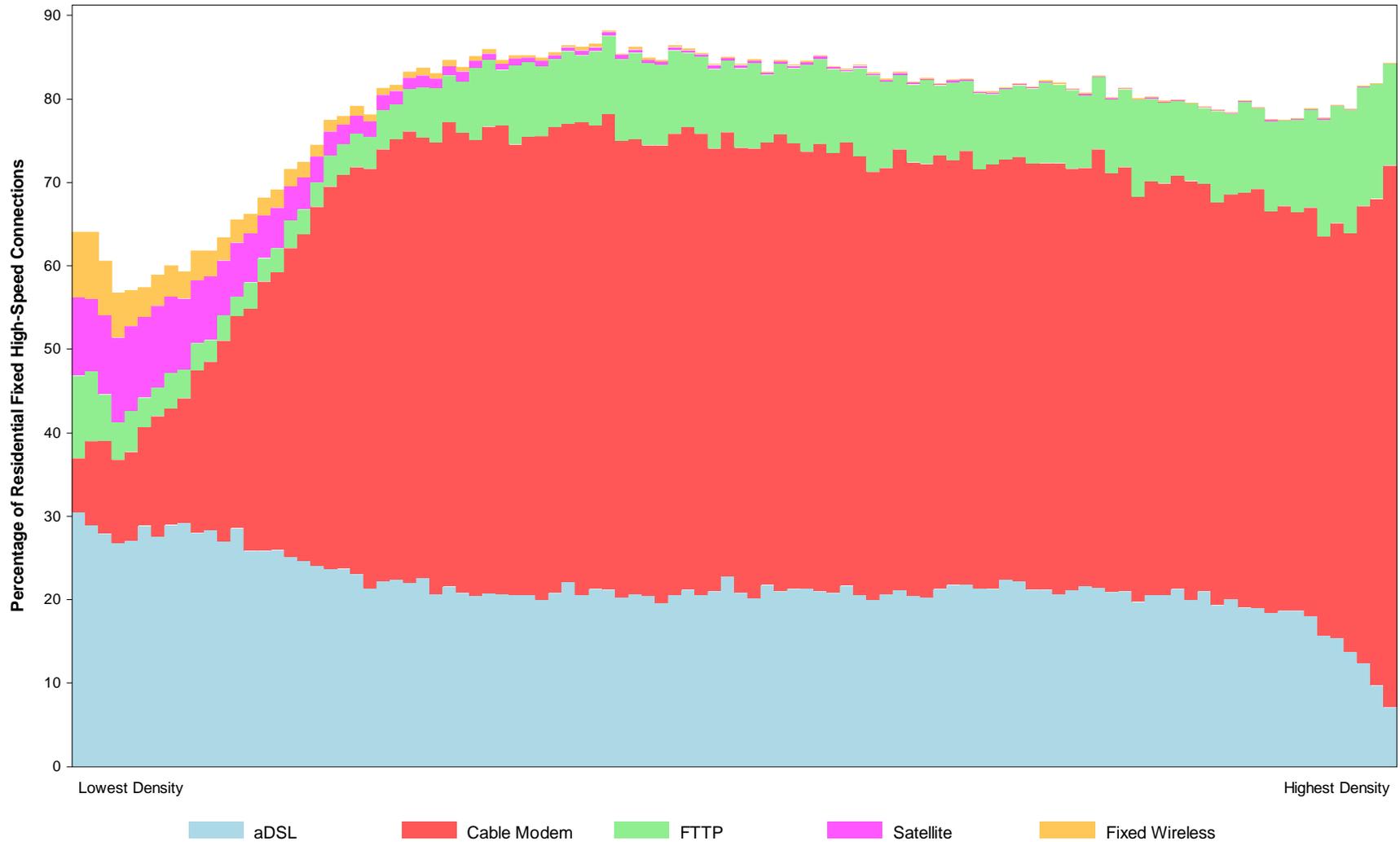
Note: Figures may not sum to totals due to rounding. See Technical Notes at the end of the report.
Sources: FCC Form 477; 2010-2014 ACS 5-year estimates (Households for U.S. and District of Columbia); Census 2010 (Households for Puerto Rico, American Samoa, Guam, Northern Mariana Islands and U.S. Virgin Islands).

SECTION 5
CORRELATED RESULTS: DEMOGRAPHIC MEASURES

Table of Contents

Figure 44	Subscribership Ratio Distributions by Income Deciles as of December 31, 2015 ..	49
Figure 45	Subscribership Ratio Distributions by Density Deciles as of December 31, 2015 ..	50
Figure 46	Subscribership Ratio Distributions by Share of Population with a College Degree (in Deciles) as of December 31, 2015	51
Figure 47	Subscribership Ratio Distributions by Average Age of County Population (in Deciles) as of December 31, 2015	52
Figure 48	Subscribership Ratio Distributions by Share of White Alone (in Deciles) as of December 31, 2015	53
Figure 49	Subscribership Ratios by Technology and Tract Household Density as of December 31, 2015	54
Figure 50	Average Subscribership Ratios by Income and Household Density as of December 31, 2015	55

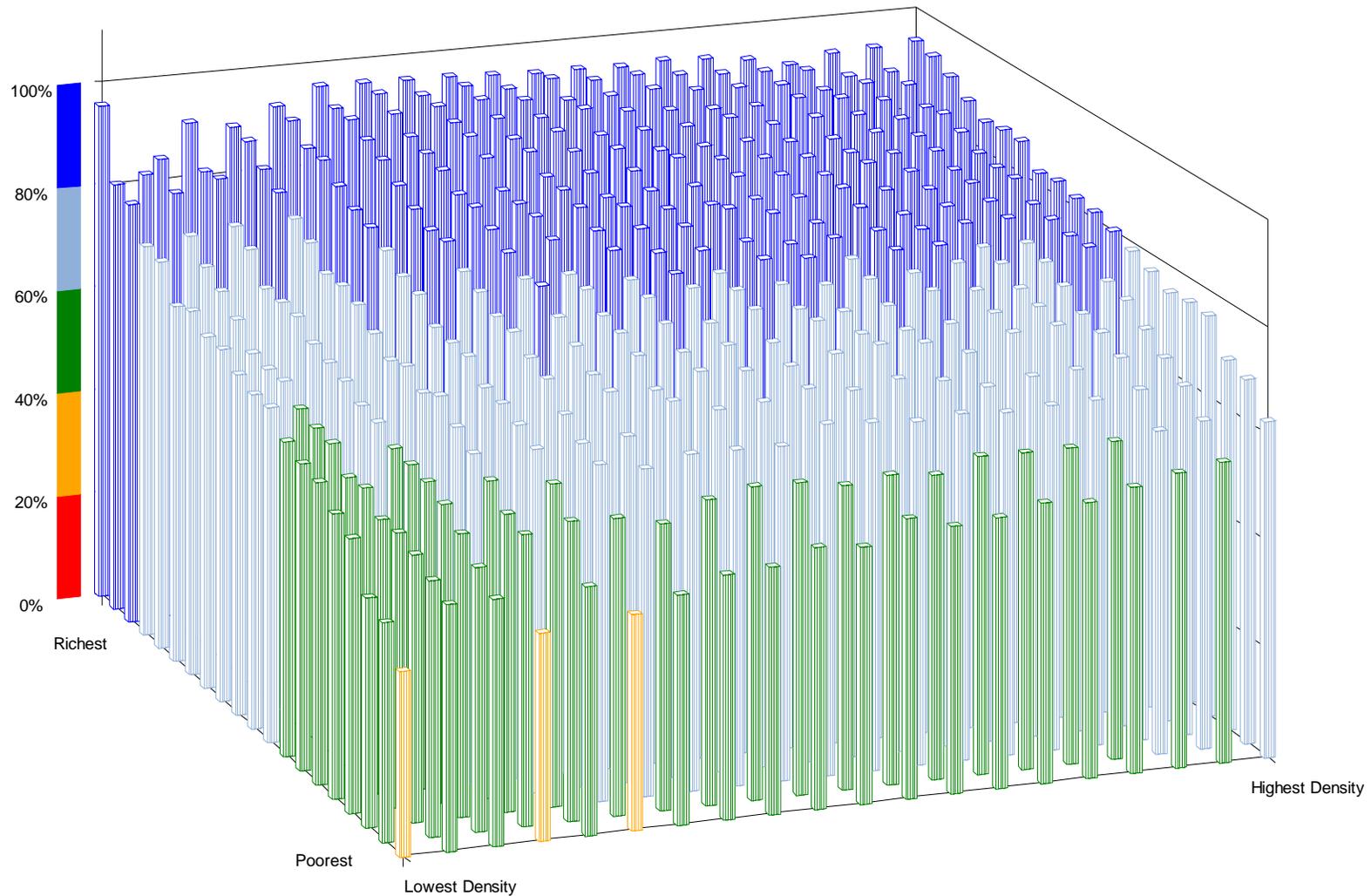
Figure 49
Subscribership Ratios by Technology and Tract Household Density as of December 31, 2015
(Residential fixed connections over 200 kbps in at least one direction)



This chart shows subscribership ratios by technology and household density. Tracts were grouped into 100 density percentiles based on households per square mile, calculated as the ratio of estimated tract households to tract land area from the Census Bureau. For each percentile, the height of the bar represents the household-weighted average ratio of residential fixed connections to households across tracts in the percentile.

Sources: FCC Form 477; 2010-2014 ACS 5-year estimates; and Census 2010.

Figure 50
Average Subscribership Ratios by Income and Household Density as of December 31, 2015
(Residential fixed connections over 200 kbps in at least one direction by Tract)



This chart shows subscribership ratios by household density and income quantiles. Tracts were grouped into 400 density/income quantiles based on households per square mile, calculated as the ratio of estimated tract households to tract land area, and median household income. For each quantile, the height of the grid represents the household-weighted average ratio of residential fixed connections to households across tracts in the decile.

Sources: FCC Form 477; 2010-2014 ACS 5-year estimates; and Census 2010.

Technical Notes

General

The information presented in this report is based on data from FCC Form 477. Through Form 477, facilities-based broadband providers submit information to the FCC about where they offer and have subscribers to Internet access services over 200 kilobits per second (kbps) in at least one direction. In June 2013, the Commission adopted several changes to Form 477.¹ Detailed information about those changes and about the Form 477 reporting requirements in general is available at www.fcc.gov/form477. Due to technical difficulties in 2014 with the redesigned Form 477 filing interface, the filing deadline for Form 477 data as of June 30, 2014 was moved to December 11, 2014. Because of that delay, the Commission staff were not able to perform their typical process of identifying anomalies or errors in the data, following up with filers, and requesting updates to the data where appropriate – a process which usually generates a significant number of corrections and hence a more accurate Form 477 data set.

Form 477 collects information about Internet access connections in service to end-user locations that are advertised to deliver information to and/or from the end user – that is, in at least one direction – at transfer rates (speeds) above 200 kilobits per second (kbps). Information is collected about the number of connections by the advertised speeds associated with each product subscribed to in the relevant geographic area, census tracts for fixed and states for mobile. Fixed providers report connections by the maximum advertised upload and download speeds, while mobile providers report connections by minimum advertised upload and download speeds. Fixed connections are further categorized by the technology employed by the part of the connection that terminates at the end-user location. Wherever a number of providers is cited in this report, multiple Form 477 filers within a holding company structure count as one provider.

“End users” are residential, business, institutional, or government entities who use services for their own purposes and who do not resell such services to other entities. Facilities-based providers report information about connections they provide directly to their own end-user customers and also connections that they provide to Internet Service Providers for resale to end users. For Form 477 purposes, the facilities-based provider of a connection is the entity that owns the portion of the physical facility that terminates at the end-user location, obtains an unbundled network element (UNE), special access line, or other leased facility that terminates at the end-user location and provisions/equips it as a connection that transfers information at rates over 200 kbps in at least one direction, or provisions/equips a wireless channel that transfers information at rates over 200 kbps in at least one direction to the end-user location over licensed spectrum or over spectrum that the provider uses on an unlicensed basis.

The mutually exclusive Form 477 technology categories are: asymmetric Digital Subscriber Line (aDSL in this report), symmetric Digital Subscriber Line (sDSL), other copper wireline, cable modem, optical carrier / fiber to the end user, satellite, terrestrial fixed wireless (using licensed or unlicensed spectrum), mobile wireless, and all other (which is included to capture deployment of additional technologies over time). In the Form 477 data collection, aDSL-based services delivered over fiber-to-the-node architecture are reported in the aDSL category. The other wireline category comprises T1/DS1, T3/DS3, and other

¹ *Modernizing the FCC Form 477 Data Program*, WC Docket No. 11-10, Report and Order, 28 FCC Rcd 9887 (2013). See also *High-Speed Services for Internet Access: Status as of December 31, 2014* (March 2016) at 1-2, available at <https://www.fcc.gov/reports-research/reports/internet-access-services-reports/internet-access-services-reports>.

copper-based connections, not elsewhere categorized, that deliver *Internet access* service at the end-user location. Ethernet connections delivering Internet access service are reported in the other wireline category if the connection terminates over copper and in the FTTP category if the connection terminates over fiber. Connections deployed over hybrid fiber-coax (HFC) architecture are reported in the cable modem category. Wireless ISPs (WISPs) report in the fixed wireless category if providing service to dispersed, fixed end-user locations and report in the mobile wireless category if providing a commercial service that can be received at any location within a service footprint. Wireless local area networks (such as Wi-Fi hotspots) that only enable local distribution and sharing of a premises connection are not included, although the shared premises connection is included.

Numbers of connections presented in this report are not adjusted for the number of persons at a single end-user location who have access to, or who use, the Internet access services delivered over the connection to that location.

Numbers of residential connections are estimated based on the total connections and percentage-residential connections information reported on Form 477.

Census tracts

Since the collection of data as of December 31, 2008, facilities-based providers of reportable fixed-location Internet access connections have been reporting connection counts at the census tract level of detail. Facilities-based mobile wireless providers report connection counts by state rather than census tract.

The census tract-level data summarized in this report were collected for tracts in the 2010 decennial census. For the purposes of this report, there are 73,767 census tracts because we exclude census tracts delineated specifically to cover large bodies of water.

About 110 of the census tracts have population but no households because the population resides in group living quarters. For the purpose of estimating residential subscribership rates by census tract, we assume these census tracts have no reportable *residential* Internet access service because persons residing in group quarters would have Internet access over a business connection provided to the operator of the group quarters. Therefore, these census tracts are included in the “zero” column.

Ratios of residential fixed-location connections to households that exceed 100%

We estimate the share of households with fixed-location connections in individual census tracts by taking the ratio of the reported number of fixed-location residential service connections to the estimated number of households. We continue to find “outlier” estimates at or above 100% and to find that the number of outliers is substantially reduced when estimates are made for individual counties rather than for individual census tracts.

Possible explanations of ratios at or above 100% include (1) geocoding misallocations of service locations to census tracts; (2) proper allocation of connections to the county level by some filers, but improper allocation of all connections to a single tract in the county; (3) possible overestimation of residential connections in service plans for which the customer base is primarily residential; and (4) connections at seasonally or occasionally occupied housing units, such as vacation homes, while the household is counted elsewhere. The numbers of households in census tracts that were used to generate the estimated ratios are themselves estimates (from Census 2010-2014 ACS 5-year estimates), which could have an

independent effect.

Maps showing residential subscribership rates by census tract

The two maps based on estimated Internet access connections over 200 kbps in at least one direction per 1,000 households (that is, estimated household subscribership rates) exclude all connections identified as business connections and necessarily exclude residential mobile wireless connections (which are reported for the state but not for individual census tracts).

Glossary

Term	Definition
aDSL	Asymmetric Digital Subscriber Line: A digital local loop typically using copper facilities and providing greater bandwidth in one direction than the other.
Cable modem service	A service which offers customers access to the Internet over a cable system.
Downstream speed	Speed of transmission from the Internet to the end user.
End users	Residential, business, institutional, or government entities who use services for their own purposes and who do not resell such services to other entities.
Facilities-based provider	Entity that owns the portion of the physical facility that terminates at the end-user location, obtains an unbundled network element (UNE), special access line, or other leased facility that terminates at the end-user location and provisions/equips it as a connection that transfers information at rates over 200 kbps in at least one direction, or provisions/equips a wireless channel that transfers information at rates over 200 kbps in at least one direction to the end-user location over licensed spectrum or over spectrum that the provider uses on an unlicensed basis.
Fixed wireless	A radio communication service between specified fixed points.
Fixed technologies	All technologies other than terrestrial mobile wireless.
FTTH or FTTP	Fiber to the Home (Premises): A network access architecture in which optical fiber is deployed all the way to the customer's home (premises).
Internet access service	Service that provides end users access to the Internet.
ISPs	Internet Service Providers: Companies or organizations that provide Internet access service (see above).
Mobile wireless service	A radio communication service between mobile and fixed stations, or between mobile stations.
Mobile wireless provider	Provider of mobile wireless service (see above).
Other wireline	All copper-wire based technologies other than DSL technologies; Ethernet over copper and T-1 are examples.
Power line	Internet access service delivered over electric power transmission lines.
Satellite communications	A telecommunications service provided via one or more satellite relays and their associated uplinks and downlinks.
sDSL	Symmetric Digital Subscriber Line: DSL technology that provides equal bandwidth for both uploads and downloads.
Speed tiers	Sub-groupings defined by ranges of upstream speeds and downstream speeds.
Upstream speed	Speed of transmission from the end user to the Internet.
Wi-Fi hotspot	Wireless Fidelity: Generic term referring to any type of IEEE 802.11 wireless network. A hotspot is a small geographic area in which users

	can gain access to a Wi-Fi network which in turn connects to the Internet.
Wireless service	Telephone, Internet, data, and other services provided to customers through the transmission of signals over networks of radio towers.
Wireless service provider	Provider of wireless service (see above).
WISP	Wireless ISP: A company that provides end users with wireless access to the Internet, most commonly by using radio spectrum designated for unlicensed use.

Customer Response

Publication: *Internet Access Services: Status as of December 31, 2015*

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